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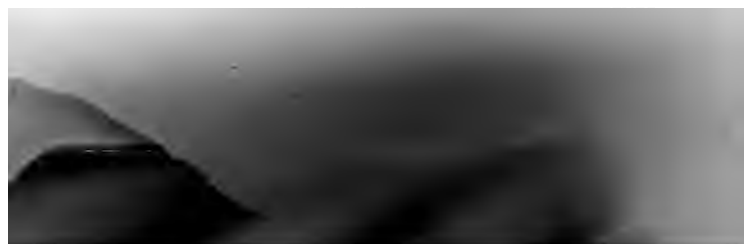
Dr. C. L. Sargent.

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And please return it. You may think this a strange request, but I find that although many of my friends are poor arithmeticians, they are nearly all good bookkeepers. — SCOTT.

Dr. C. L. Sargent.

No. 100 Building.



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SPECIFIC DIAGNOSIS:
A
STUDY OF DISEASE

WITH SPECIAL REFERENCE TO THE
ADMINISTRATION OF REMEDIES.

BY
JOHN M. SCUDDER, M. D.
=

**PROFESSOR OF PATHOLOGY AND THE PRACTICE OF MEDICINE IN THE ECLECTIC
MEDICAL INSTITUTE; AUTHOR OF THE PRACTICE OF MEDICINE; THE
PRACTICE OF MEDICINE IN DISEASES OF CHILDREN; THE
PRINCIPLES OF MEDICINE; DISEASES OF WOMEN; ON
THE USE OF INHALATIONS; SPECIFIC MEDICA-
TION AND SPECIFIC MEDICINES, ETC., ETC.**

SIXTH EDITION.

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P R E F A C E.

IN presenting this volume to the profession, as a companion to "Specific Medication and Specific Medicines," my object has been to make a study of the prominent expressions of disease, with reference to the administration of remedies. However learned we may be in pathology, and associate branches of medical study, unless we can make our knowledge point to means for the relief of suffering, the arrest of disease, and restoration to health, it will be of but little use.

We believe that the expressions of disease are uniform, and always have the same meaning, and that the action of remedies is something definite and uniform—"that like causes always produce like effects." If we properly study our cases, so as to determine a definite condition of disease, and know the direct action of remedies in such conditions, we will have a certain and rational practice of medicine.

I concede that the study is difficult, but it is difficult principally because it is new, and sufficient observations have not been made. Physicians have so long practiced by rote, and taken it for granted that there was no "certainty in medicine," that we have not the material we would wish for specific diagnosis. But attention is being directed to it, and the time is coming in which the field will be full of observers.

No apology is made for the shortcomings of this little book, though I hope that in the main, experiment will prove the correctness of its statements. It would be singular if there were not some errors, and some things to be corrected by further experiment and study. It does not profess to be a complete treatise, or to give all the information that might be thought desirable. But it is a study of disease, which may be continued by other books and at the bed-side of the sick.

If it serves the purpose of stimulating investigation and thought, pointing the road to a better system of medicine, I will be fully compensated for the labor.

CINCINNATI, Nov. 15, 1874.

ON THE STUDY OF DIAGNOSIS.

WE wish to make a new study of Diagnosis—one that will show us the relation between *symptoms* of disease and the curative action of drugs. Evidently this is what we need to give us a rational practice of medicine—very certainly it must be the foundation of specific medication.

It is yet the opinion, that "diagnosis" has reference to the classification of disease according to the received nosology; that it means naming the affection "bilious fever," "typhoid fever," "pneumonia," "nephritis," etc. And so it does with the genus doctor, at large, and their souls travail in diagnosis until a suitable name is delivered. And then they consult their memories and books for recipes to throw at this name, which to them seems almost an entity.

It looks absurd when thus plainly stated, yet it is true to a far greater extent than the majority suppose. If we examine the literature of the profession, we find that writers on the "Practice of Medicine" labor to

make diagnosis in this way, and so arrange the symptoms of disease that their readers may be enabled to follow in their lead. The student would certainly think, from this teaching, that getting a *name* for a disease, was the first and principal object in medical practice. Not only does this seem the principal, but the only end of medical study, and men pride themselves on their skill in naming diseases—calling it diagnosis.

What can be more natural than that medicines should be prescribed at names, when so much trouble is taken to affix them? And so we find that treatises on therapeutics are efforts to associate drugs with names of disease, with a—"this has been used with advantage"—"this has been employed in," etc., etc. The trouble is that almost every remedy in the *materia medica* has been prescribed *at* the more common diseases—pneumonia, for instance—and the student has difficulty, not from the paucity of his means, but from their abundance.

Some go a little further than this. They want a name for their disease, it is true, but they also make their diagnosis extend far enough to guide their therapeutics. Thus they determine a condition of the stomach that indicates an emetic, constipated bowels a cathartic, dry skin a diaphoretic, scanty urine a diuretic, periodicity Quinine, sleeplessness or pain an opiate, heat and dry skin baths, etc. Add to this counter-irritation for the relief of local disease, and we have the ordinary round of treatment.

This kind of diagnosis is well enough—is very much better than that which simply names the disease—but it also is very crude at times. For we find at times that there are very much better means to relieve the stom-

ach than an emetic; and that in some, where seemingly indicated, it would do more harm than good. That constipation is *not* an indication for cathartics, and that this class of remedies are so used as to do a vast amount of harm. That impaired secretion from the skin does *not* mean diaphoretics; for when most indicated they will frequently not cause secretion; and that other means, not directed to the skin, will cause it. That scanty urine does *not* mean diuretics, for they will frequently fail to influence the kidneys when they seem to be indicated most, and will sometimes still further arrest secretion. Periodicity does *not* always mean Quinine, for Quinine fails nine times where it succeeds once, sometimes intensifying disease, at others producing a disease peculiar to itself—quinism—worse by far than the disease for which it is given. And sleeplessness does *not* mean Opium, for it fails frequently, and, as generally used, does far more harm than good.

It is still worse when the physician thinks he sees the need of cathartics, diuretics, diaphoretics, tonics, Quinine, nervines, etc., and gives them all at once, or in a miscellaneous hodge-podge. The common result is to intensify the disease, derange the stomach, and impair the vegetative nervous system. The remedies are frequently given so that the action of one opposes that of another, as for instance a cathartic with a diaphoretic, or at such times that they can not possibly do what they are intended for.

How, then, shall we study diagnosis? Is there any better method than that usually pursued?

I believe there is a right way to study diagnosis—one that will prove satisfactory to patient and physician—will name the disease for the one, and determine a ra-

tional therapeutics for the other. Such a way I endeavored to point out in my *Principles of Medicine*, to which my readers are referred for my opinions in extenso.

Man has but one body, and though it may be divided into parts, each has the same life, is supplied from the same blood, governed by the same nerves, and has the same nutrition and waste. Only in so far as drugs act on special parts or organs, need we study disease of these independent of the organism at large.

Man has but one life, and it is the same for all parts. The normal manifestations of this life we call health; the abnormal manifestations of it disease. If we can always think of disease as a method of life, in a living body, we will have gotten rid of an old error, and have made the first step toward a correct diagnosis, and a rational therapeutics.

Disease, then, is not an entity—something to be forcibly expelled from a living body—but is actually a method of life. It can not be purged from the bowels, vomited from the stomach, strained from skin and kidneys, or exorcised by counter-irritation. Such means may do good, as when they remove an offending substance, or when they establish a function that is deficient, but they should have a rational use.

The life of disease is not as good as the life of health, neither in the whole nor in any individual part. It is always exhaustive, impairing the life now, and the life to come by renewal of tissue. It makes no difference what may be the seeming condition of the body or a part in disease, the real condition is, an impairment of life. We study disease, therefore, as a method of living; and we treat the diseased body as a living body, which

has been placed in such position that its life has been enfeebled or deranged.

We next want to understand clearly the structure and uses of the various parts of this one body. We want to know clearly the conditions necessary to healthy life, and how their change works that we call disease. If we can understand clearly the relation of a condition or function to healthy life, we are in a position to learn how the change in condition or function produces disease, and a correct therapeutics is at once suggested.

Examining the human body, we find certain conditions and functions underlie others, and seem to be *first* elements in the sum of life. Of these I may name temperature, circulation, innervation, nutrition and waste, and the blood. We always study these first, and we want to know the exact character of the wrong, in one or all, and how that wrong may be corrected.

Going one step farther, we want to know the relation of these conditions and functions to one another. There is a general relation in health ; possibly they are of equal importance in the problem of life. But in disease one or other may stand first, and serve as a basis for wrong of life in many directions. Thus a disease involving every function of life, may arise in a wrong of the temperature and circulation of the blood. There is a want of appetite that tonics will not reach ; a wrong of secretion that can not be righted with cathartics, diaphoretics and diuretics ; a wrong of innervation that can not be reached with narcotics and nervines. Direct remedies that restore normal temperature and circulation, control the entire process of disease ; like a card-house, the removal of a first card is sufficient for the overthrow of the entire structure.

It is not so easy, always, to determine which wrong is thus first, yet with care it may be determined—and this is an essential in good diagnosis. A disease presenting similar symptoms—the *same* symptoms to an ordinary observer—may rest equally upon a first lesion of the circulation, innervation, nutrition and waste, blood-making, or the conditions of the blood. We want to know which stands first, and then rectifying the first wrong the treatment is easy and successful.

Disease has certain expressions, which we call symptoms, as health has certain expressions. We find that the manifestations of life in health are very uniform, and consistent, and one can hardly mistake their meaning. So in disease, the expression of morbid life is uniform, and constant, and does not vary in different individuals, as many have supposed. If we determine in any given case the expression of diseased life, we will find it the same in all cases.

It has been claimed, and tacitly admitted that symptoms of disease were so changeable and inconstant, that they could not be depended upon with any certainty. This was certainly true to those who made their diagnosis according to the received *nosology*, and then prescribed at the name. For as very diverse pathological conditions would be grouped under each name, the symptoms would of course vary, and the treatment would show the element of uncertainty in so marked a manner that *idiosyncrasy* would be constantly called in to explain the trouble.

We propose studying the expressions or symptoms of disease with reference to the administration of remedies. It is a matter of interest to know the exact character of a lesion, but it is much more important to know

the exact relationship of drug action to disease expression, and how the one will oppose the other, and restore health. If I can point out an expression of disease which will be almost invariably met by one drug, and health restored, I have made one step in a rational practice of medicine.

I have no hesitation in affirming that if we have once determined such relationship, we have determined it in all diseases alike, in all persons, and for all time to come. If, with this symptom or group of symptoms, my Aconite, Nux or Podophyllin cures to-day, it will cure to-morrow, next year, and so long as medicine is practiced. If it cures Tom, it will be equally applicable in the same condition to his father, mother, wife, or mother-in-law.

"Do you mean to say," asks the reader, "that the present system of nosology is useless?" Yes, so far as curing the sick is concerned, that is just what I mean to say. Not only useless, but worthless—a curse to physician and patient—preventing the one from learning the healing art, and the other from getting well. But you may ask, "how would you make out the certificate for the *Undertaker*?" That's just what we wish to avoid, we don't care about furnishing subjects, and would very much rather people should die of old age, and then we would write it in English—"old age."

The first lesson in pathology we want to learn is, that disease is *wrong* life. The first lesson in diagnosis is, that this *wrong* finds a distinct and uniform expression in the outward manifestations of life, cognizable by our senses. The first lesson in therapeutics is, that all *remedies* are uniform in their action; the conditions being the same, the action is always the same. We learn

to know the healthy man—know him by exercising all our senses upon him. We want to know how he feels, how he looks, how he smells, how he tastes, and what kinds of sound he makes. Then we want to learn the diseased man in the same way, and compare him with our healthy standard—certain expressions of life meaning health, and certain other expressions meaning disease. Then we study the action of drugs upon the sick, and when we find them exerting an influence opposed to disease and in favor of health, we want to know the relation between the drug and the disease—between disease expression and drug action.

I do not say that we should not study drug action in health—indeed I think it a very important study. You may, on your own person, study a wholly unknown drug, and determine its proximate medicinal action. How? Easy enough. You will feel *where* it acts; that points out the local action of the drug, and as a matter of common sense, you would use it in disease of that part, and not of a part on which it had no action. You will feel *how* it acts—stimulant, depressing, altering the innervation, circulation, nutrition and function. If now you want to use it in disease, use it to do the very things it did in health, and not as our Homœopathic brethren would say, to do the very opposite things.

This might not seem altogether pertinent if we were studying old diagnosis, but *new* diagnosis means medicine, and must point out the cure for the particular case in hand.

THE STUDY OF LIFE.

The diagnosis that we are studying has a physiological basis, and we want to learn something of the *kind* of physiological knowledge necessary. Is it that which may be learned from Carpenter, Draper, Huxley, etc. ? Most decidedly it is not. The knowledge from books is most important, excellent in its place, but worth nothing here unless supplemented by a new study.

We must study the living man, and learn to recognize every manifestation of this life by our senses.

Nothing less will serve the purpose in rational medicine. We want to bring our own senses to bear upon him, and *know* how he feels, tastes, smells, and how he looks and what sounds he makes. This study of the living man, the most important study in medicine, is almost wholly neglected. Men live a lifetime, and know nothing of the manifestations of life. Students become conversant with books, attend their lectures, pass their examinations, and yet have no practical knowledge of human life. And physicians will practice medicine a lifetime, and yet fail to know what healthy life is.

How would you make a good surgeon ? There is but one way. He must exercise his senses on the human body, and learn to know it for himself. He studies upon the cadaver, and learns the relation of parts; and he also studies the living man, and learns to recognize these relations by the sense of touch. Your accomplished surgeon recognizes a displacement or fracture, as soon as his eyes rest on the part. Let him pass his fingers over a limb in the dark, and he will tell you if anything is wrong, and just what the wrong is. He is a good surgeon, just exactly as he is an expert in this.

Not a year passes but what we have one or more suits for malpractice against physicians of our school, arising out of bad bone-surgery. (They have quite as many in other schools.) Why these cases? Simply because they have not taken the trouble to learn on the cadaver and living body for themselves, just how it is made, and the relation of one part to another. Any man, whether he is a surgeon or not, can so train his senses, and know the anatomy of man, that mistakes would be impossible, and cases of malpractice would be the result of accident, or the fault of patients.

I say to the student, study anatomy and physiology on the *living* man. Observe him closely with your eyes, until you learn his varied expressions. See him walk, sit, lie, work, eat, breathe, talk, etc. Feel of him, and see how he is made, and what he feels like in different parts. Learn every prominence of bone in the body, and its relation to articulations, blood-vessels, nerves, organs, etc. Hear every sound he makes, and learn to recognize its character. And, lastly, learn to recognize all of the many smells of which he is the base. Learn him from the crown of his head to the sole of his foot, and analyze him with your own senses, and you will have the foundation for a good physician.

I place very great stress on this method of studying physiology, and recommend it to the old practitioner as well as the medical student. No knowledge in the memory can take its place. It must be the basis of a rational practice of medicine, for unless we know what health is, we can not know disease, and unless we *know* disease we will have a random and very uncertain therapeutics.

I have already called attention to the necessity of

training all our senses so that we may be able to observe well. These faculties are like many others, they may be so trained under the influence of the will, that after a time they work automatically, and with a rapidity that is astonishing. This is the work of time—but time placed where it will do the most good. All that one need do, to have good, active senses, is to use what he has rightly.

There is no mistake about these things, and I will guarantee any physician a success that will astonish him, if he will put them in practice. Need I say that the reward is great. Outside of professional reputation, and the ordinary rewards of successful business, there are sufficient returns. A man's conscious life is in and through his senses, and as these are educated and enlarged, his life becomes larger, and his pleasures increased. Nature is a most bountiful mother, and her laws bring certain compensation; and of these there is none truer than that "a man grows as he is rightly used."

APPLIED ANATOMY.—The ordinary study of anatomy is a good thing, and is the basis for a sound medical education. Yet I am sorry to say that the study of anatomy with the majority of physicians is very "ordinary." It is a good thing to be able to name the various bones, processes, muscles, and organs of the body, but it is very much better to *know* them, as a man knows his best friend. I may know a man's name, and yet know really nothing about him, physically, mentally, or morally. So it is in the common study of anatomy, the memorizing of names takes the place of that study which will enable one to really *know* the structure of the human body.

A good anatomist will strongly insist on dissection as an important means of learning. He well understands and endeavors to impress the fact that it is only by personal examination that one may know the various tissues and organs, and their relation to one another.

The surgeon supplements this by the additional statement that the most important preparation for the use of the knife in surgery, is the use of the knife in dissection. Not only to acquire anatomical knowledge, but to *know* the resistance of different tissues to the scalpel, and to train the sense of touch.

An accomplished physician should be a good anatomist—the skilled diagnostician is a good anatomist. No one need say he has no opportunity, for every one can make opportunity. A dead man is a good thing in this study, but any animal or part of an animal will serve the purpose of the man who really wishes to know, and there is not so very much difference between man and the remainder of the mammalia. The nearest butcher shop will furnish *material* in abundance—from eyes, to tongue, larynx, trachea, bronchial tubes and lungs; the digestive canal and its associate organs; kidneys, etc.: whilst a quarter of lamb or veal gives pretty good muscular dissection.

The worthless curs prowling about the village or town, give excellent facilities for dissection or vivisection. Chloroform the brute, and he is ready for work, and you may educate your touch on living tissue, as well as learn anatomy.

In the olden time the study of anatomy was commenced with the bones—not with pictures or plates of bones. This study in which bones are tangible realities, and convey to the sense of touch and the eye their

peculiarities is the right study. Every physician should be able to recognize any bone by the sense of touch, and at once give it its proper position. Just as he should be able to recognize the normal from the abnormal in shape, size and position. The skeleton properly articulated is a valuable adjunct, and if it was thoroughly studied by the hands in a dark room, we would have but few cases of mal-practice in bone-surgery.

But this study of anatomy from the skeleton, and by dissection, assisted by reading and lectures, is but preliminary to a more important study. We want to study anatomy upon the living man. We want to know the situation and the relation of various parts, so that we may be able to put our finger upon them at once, and detect the slightest variation. We want the impress of this living man upon our senses, so that they may *know* him intimately. What does he look like? What does he smell like? What does he taste like (in so far as taste is applicable)? What sounds does he make? And how does he feel?

We want to know his every expression, standing, sitting, lying, on his back, sides, etc. His expression in activity, and at rest. We study his muscles in life, their arrangement on the bones, and their influence in giving the body motion. We study the situation of blood-vessels in the same manner, and learn to trace their course by the prominences of bone, relation to muscles, etc., and going deeper, we study osteology again, as the bones are clothed in tissue.

No man need excuse himself for want of opportunity, so long as he possesses a body of his own, and there are so many other bodies that might be engaged for the purpose.

There are two objects in this study, both important. The one is to *know* the mechanism of life, and the other is to educate the senses. The importance of the first will not be disputed, and before we have concluded this study, I think the other will be conceded.

APPLIED PHYSIOLOGY.—The knowledge of physiology from the books is a good thing, but it is not sufficient for our purpose. We not only wish to learn that Carpenter, Huxley, and others, have witnessed certain phenomena, and learned to know them as constant expressions of life, but we wish to know them of ourselves, and through our senses.

Dr. Huxley introduces the study of physiology by saying—"The body of a living man performs a **great** diversity of actions, some of which are quite obvious; others require more or less careful observation; and yet others can be detected only by the employment of the most delicate appliances of science.

"Thus, some part of the body of a living man is plainly always in motion; even in sleep, when the limbs, head and eyelids may be still, the incessant rise and fall of the chest continue to remind us that we are viewing slumber and not death.

"More careful observation, however, is needed to detect the motion of the heart; or the pulsation of the arteries; or the changes in the size of the pupil of the eye with varying light; or to ascertain that the air which is breathed out of the body is hotter and damper than the air which is taken in by breathing.

"And lastly, when we try to ascertain what happens in the eye when that organ is adjusted to different distances; or what in a nerve when it is excited: or of

what materials flesh and blood are made; or in virtue of what mechanism it is that a sudden pain makes one start—we have to call into operation all the methods of inductive and deductive logic; all the resources of physics and chemistry; and all the delicacies of the art of experiment.”

Huxley is an admirable teacher, probably the best living, and we will do well to get an idea of these methods. The first lesson we learn from these brief, but expressive paragraphs is, that *we* are to observe this man, who “is plainly always in motion,” and that we are not to be satisfied with the observations of another. Then follows the natural sequence in these observations. At first the gross expressions of the body, and the difference between the man awake, asleep, dead. Next a “more careful observation,” determining the motion of the heart, etc. And lastly, the skilled observation, from a trained mind, aided by the various instrumentalities and appliances of science.

Books are useful in this study, though not the object of study; it is the man we want to know, not the book nor its author. The book may serve as a guide-board, pointing the way, and at the same time give us a standard of comparison. It tells us what to exercise our senses upon—what to observe—and it informs us what others have observed, and what is the common standard of healthy activities.

There is nothing in the life of the man but should be a subject of close scrutiny. We want to know him in the entirety of his action, as we wish to know him in every detail. And we want to know him so intimately and thoroughly, that this physiological man shall be always present with us as a standard of comparison.

The reader will at once see the necessity of this study as a basis for diagnosis. The physiological man is the man of health, the pathological man is one who has left this common standard of being. The physiological man is the standard of measurement, the common mean that we measure from. To have a measurement at all, it is necessary to have a fixed point to start from; this healthy man is the fixed point.

Measurement has reference to certainty, and certainty is what we most desire in medicine. A measured mile is a definite distance, an imaginary mile, having its origin and termination in the cranium of Paddy Ochhone, is a very different thing, though very like the ordinary measurements in medicine.

The first thing that the physician wants, then, is a sound physiological standard, which he carries with him as he makes his rounds. It is lain by the side of the patient in bed, sits by him on the chair, stands by him, walks by him, puts out its tongue, extends its hand to give the pulse, has lungs, bowels, kidneys, reproductive apparatus, etc., always at your service, and open for comparison.

Disease is wrong life, and a wrong presupposes a *right*. To determine the existence of a wrong, we must know what the right is; to determine the character of the wrong, we must compare it in all its parts with the standard right. This is diagnosis, as the reader can at once see.

How now shall we get this physiological standard. Clearly by observation with our own eyes, and the use of our own senses. Each man must make it for himself, and give it distinctness by the education of his own senses. Theoretical knowledge will not do.

If we take Huxley's first example, "awake, asleep, dead," we find an excellent study. Can you tell the difference between the appearance of sleep, sleep and death? Hardly by the first glance, and possibly only by a very close examination, and some experimentation, (the last especially evidences a state of uncertainty). But if we carefully observe the phenomena of sleep, in the infant, the child, the adult, we will soon have a healthy standard, and the expressions of sleep are so distinctive, that no one could deceive us by shamming sleep.

So, too, if we carefully observe and study death, we will never mistake it. There are distinct expressions of body in death that can never be counterfeited. It is not only the absence of motion, of respiration, of pulse, or heart-beat, of heat, but there is an absence of the expression of life in its totality, and an expression of lifelessness that is characteristic. The relaxation of death is distinctive, as is the rigor-mortis, as is the decomposition of tissue.

It is a good thing to have a standard of death for comparison as well as of life. Not that we usually have any doubt of death, but that we require it as a measure of life. It is well to have two points to measure from—the standard of life and the standard of death. There is an approximate death, as well as a total death; a dying by degree, or part, as well as a dying at once and in entirety.

Taking a man in entirety, we find a distinct expression when he walks, stands, sits, or lies. Every part of the man talks to us, his hands, his arms, his legs, his feet, even his "calves may wink," as described by Dickens in one of his Christmas stories.

We not only learn from this much of the physical life of the outer man, but learn of the life within. The expression is the shadowing forth of the underlying nervous system, and this again of the real or spiritual man behind this. As physical, mental and moral health has a distinct expression in the outer man, which we purpose using as a standard of admeasure; so all diseases, physical, mental and moral, have a distinct expression in the outer man. You will no more find disease under a healthy exterior, than you will find a devil in the garb of an angel.

We have a standard temperature, which we may learn to recognize by the hand, though it is best to measure it with a thermometer. We have a standard electrical condition as an important factor of life, which we will learn to recognize in the general expression and movement, the special expression of the face and eyes, and by the touch. And we have a standard formative force, which we will recognize in the expression of tissues, and the sensations they give to touch.

We have a standard color for the general surface, and for special parts that the eye will learn to recognize, and use for comparison. We make this study thorough; it is the skin at large, and then those portions where the circulation is less free, where it is very superficial and free, the nails, hair, veins, etc. We have a standard color for mucous membranes, for lips, gums, tongue, teeth, etc.

We have a standard in touch—of smoothness, resistance, elasticity, size and association; and we have it of every part of the body. Of course we have not learned it of Huxley or Carpenter, but by the use of our own hands on the human body.

We have a standard respiration, in frequency, fullness, depth and freedom, which is distinct and clear, and which we know of ourselves by observation.

We have a standard circulation, which we know at the radial artery, by the even, distinct, regular blood wave that passes under our finger, as well as by the expression and color of the surface, and the expression of parts associated with the heart in action.

We have a standard condition of the digestive organs, which we learn from books and by observation. It don't take long to learn, even by the general expression, and the special expression of the muscles of the mouth, whether a man has a good appetite, good digestion and good blood-making. Even constipation will be shadowed forth in the outer man so that one may recognize it.

Blood-making and nutrition must have distinct expression, and a standard for measurement will be readily formed, for all functional activity is dependent upon nutrition.

The standard of healthy excretion by skin, kidneys, and bowels is readily formed by observation. Not observation on the sick, and under the influence of drugs, as many suppose, but upon the well.

Thus we see it is possible to so learn our physiology, that it may serve as the basis of a rational practice of medicine. And I think every reader will see that this education is essential to good diagnosis, and that its attainment is the first object in medicine. This is not a question of schools; it is a question of sheer empiricism, (call it quackery if you will), or rational medicine; it is a question of whether the physician is to be a coadjutor and aid to death, or whether his influence will be upon the side of life and health.

METHODS OF DIAGNOSIS.

Where do we find the expressions of disease? When you think of this question a moment, it does not seem so easily answered; indeed it furnishes good material for thought. Probably we had better preface it with another. How do we find the expressions of disease? Man has knowledge of things external to him, by means of the general sense of touch, and the special senses—sight, hearing, smell, taste. We may ask, then, when brought in contact with the sick, what do *we* feel, see, hear, smell, taste, that differs from the normal condition—health. What the patient feels, sees, hears, smells and tastes is not so important, for his senses are impaired by disease, they have never been educated, and his mind is not in a good condition to receive impressions.

I imagine the reader saying to himself—well—really—I don't know about that. I don't feel my patients much, and am not sure that I learn much by feeling. I see them—but—I don't know that I can tell the character of disease by sight. I hear—yes—I hear all the patient has to tell me about his bowels, number of operations, whether he passes wind up or down, or both, makes water, where he has aches and pains, etc. I don't smell much, unless I examine the bed-pan or chamber utensil, and I don't want to taste in the sick room. That is—he makes his diagnosis, from the patient's feelings, and not by the use of his own senses—a very imperfect way of making a diagnosis.

We have called attention to the uncertainty of diagnosis from "what the patient says," yet it is the com-

mon means of diagnosis with all schools of medicine. If the patient was wholly truthful there would be sufficient uncertainty, for they have little knowledge of disease, little skill in observation, and from disease they are incapacitated for reasoning. The patient can not, in the very nature of the case, know very much of his disease, and does not know that little well.

If now we supplement this by the well known tendency to exaggeration by the sick and friends, we find still more uncertainty. You ask when you visit a patient whether he slept. The wife answers—"not a wink," and yet you know from the patient's expression that he has rested during the night, though his sleep may have been broken. Or the nurse answers, "Oh, yes, he had a good night's rest," though the only ground she has for supposing so is because she slept herself, but the patient's expression shows you he has passed a restless night. You ask if the patient has taken food—"no, he hasn't been able to take a bite," though you find on persistent inquiry, that he has had broth, or milk in sufficient quantity. You ask if he has passed urine—"Oh, yes, sufficient," yet you see by the pinched, anxious countenance, and position of abdomen and pelvis, that he is suffering from retention or suppression of urine. You ask if the patient suffers much—"Oh, yes," is the reply, "I have had severe pain," or "I have suffered intensely," yet you see by the countenance that the statement is false or overdrawn.

I do not believe that my patients are worse in this respect than others, yet I have occasion to say to myself every day, when listening to the patient's or nurse's story—"Madam, or sir, you are lying." Indeed, I have always made it a rule to believe nothing that

was told me in a sick room, unless it was corroborated by my examination of the patient.

I have tried the experiment several times, of seeing how far the patient and attendants would go in their exaggeration. Take one that is imaginative, and by leading questions and promptings you can get the symptoms of every ailment to which man is subject; and the story will have more consistence and semblance of truth, the more the patient knows of disease. The nurse is frequently as bad as the patient in this respect, and quite as easily led to exaggeration. I had an illustration of this a few weeks since in the person of a monthly nurse. The mother and child were doing well, yet you would think from the nurse's description that they were just on the point of having every ailment that the puerperal state would afford. The mother was not easily influenced, or the nurse would really have made her sick.

Why has a *good* physician better success in diseases of children than in other cases? There is no doubt of the fact, and I have heard it remarked many times—"I would much rather treat children than adults—medicines act better." You can't question the child, and you learn but little that is important from the mother—how do you get your information? True, the mother and friends will say—"it is so hard to doctor children, you can't find out what is the matter with them." But a good practitioner knows better than this, and though possibly he has never thought about the subject, he knows he can treat children better than grown persons.

Why? For the very good reason that he uses *his* senses, and prescribes from what *he* knows, instead of taking the say-so of patient or nurse as a basis for the

prescription. If I should suggest to you, that in the practice of obstetrics you should place dependence upon the statement of nurse and patient, instead of making an "examination"—you would think it most absurd. Yet, in reality, it is not more absurd, than depending upon the story of nurse and patient in ordinary diseases.

If these are facts, and I think the experience of every reader must satisfy him that they are, we want to change our method and get a better basis for diagnosis and prescription in diseases of the adult. Let us suppose every patient a child—which they are in fact, so far as medicine is concerned—and give them the same careful examination that we would to the child, and thus reach conclusions from what we know, rather than from what patients or nurses say.

We do not wish to lose the advantage of any information we may get from patient or nurses, but we propose to make no suggestions in the manner or character of questions, that will bring false answers. There are some things the patient will know, and a little care will frame the questions so as to get at the real facts. There are some things the friends or nurse will know, and direct questions will usually bring straight replies. But there are many things that neither can know anything about, at least with any certainty, and these should always be avoided.

All answers should pass in review of our own senses, and what we know of health and disease. These are the judges, and if the evidence is good it will have their approval; if it does not have their approval we throw it to one side. We do not purpose receiving anything that is opposed to what we know of disease, and we do

not purpose believing anything that is opposed to the evidences of our senses.

THE EDUCATION OF THE SENSES.

We have already seen that the education necessary to make a good physician, is not from books, or of the memory—both good in their place, but insufficient. The education that gives the best results, and makes the successful practitioner, is of the senses, and of the brain to receive impressions, and make deductions.

We have called attention to the proper study of anatomy, by which one may *know* the structure of the human body of himself; and the right study of physiology, by which one may *know* the various activities of this mechanism. To make these attainments requires study—not midnight oil burned in reading books, but the continuous exercise of our senses upon the human body, living and dead.

The same course of study is necessary to know disease. The description from Aitkin, Wood or Scudder, is not the knowledge we want; it is not what another man knows that is of advantage to us, any more than it is another man's dinner that sustains our life. We want to *know* disease for ourselves, and we learn it by the exercise of our senses upon diseased bodies.

If the senses, then, are the instruments by which we obtain knowledge, it will at once be patent to the reader that their development and goodness will be the measure of our ability and our attainments. Hence the man of educated and acute senses will be far superior to and have every advantage over the man who has not been thus trained and developed.

Most persons seem to think that the human senses are natural, not acquired—that they are born to us, and not the result of education. This is a very great mistake, and a grave error to the physician. Man is born with an organism that, so to speak, has germinal capacities for use, and its future development is by normal use. The child at birth has perfect hands and arms, every bone, muscle, bloodvessel and nerve being there; but they are as yet wholly useless. Its feet and legs have all the parts of the adult, but it can not walk, or even wag its toes under the influence of the will. Its eyes are perfect, yet the images formed upon the retina are wholly without meaning, and might quite as well be a blank.

The child slowly learns to use its hands, and months pass before it can hold an object, and a still further time before it can move the object in obedience to the will. We see it day by day learning to see, slowly taught by its surroundings. And the adaptation of the nether limbs to walking is the persistent work of the first twelve or sixteen months. Compare the child of these attainments of one year with the child of two years, and you see a wonderful difference. The education has been continually going on during this period, and with continued use in right directions comes increased development. At the third year there is further improvement, and thus, as we go on to the fifth, the tenth, the twentieth year, we observe a continued education of the senses, and a better development of them.

I want to call attention to the fact that we find every grade of development in different individuals, from the first year up to maturity, and that this development does not always depend upon the original capacity. A

difference in use or in education, so to speak, gives different capacities. It is not in the initial or starting point, but in the method of progress, that gives the fully developed sense. If the child has been rightly directed, and the senses have been rightly used, they will have proportionate capacity.

Many who would admit that the human senses are acquired, think of them as being acquired very much as the man increases in stature and weight, and something essentially belonging to this period of growth. They conclude that the senses grow with the body, and attain maturity when it has reached the full size and stature of a man; and now a man, having his full capacity, will find neither increase nor diminution so long as he may live. They measure a man in all his parts in this way; his every function is now developed for life. A greater mistake could not be made.

The law of development is always in operation in the human body, as it is throughout the animal and vegetable world. *As any organ or part is rightly used, it grows in capacity.* Not only in infancy, in childhood, up to adult years, but each and every year of a man's life to old age. It is more marked, of course, when the reproductive powers are active, but it is always a law of life. The man between thirty and forty years, will find that **he still has the germs of a large capacity, which needs but the right use for development.** He may grow legs, **arms**, body, chest, lungs, brain, the sense of touch, of **taste**, of smell, of hearing, of sight, if he will; all that **is** necessary is, that he should rightly use that he has.

Shakspeare makes his typical Dogberry say,

"To be a well-favored man is the gift of fortune;
But to write and read comes by nature."

But however it may be with reading and writing, very surely acute sight, smell, taste, hearing, touch, do not come by nature. We all recollect the tedious process of education—how we slowly attained our A, B, C's, and what a work we had done when we could spell *b-a*, *k-e-r* *ker*, baker—and so on through, whether it has been little or much. This is the type of education, and this is the way it is obtained—little by little, and by continuous application.

But there is another view of the question, quite as important to many persons. The law is not only operative in the one direction—to increase functional capacity—but quite as much so in the other direction—to lessen or take away that we have. The part or organ disused loses its functional capacity, becomes atrophied, and finally loses the power of reproduction—is wholly gone. The Indian *Faakar*, who vows to hold his arms above his head, finds after years are passed, that they are no longer obedient to the will, are lost. This is the case with any part of the body—with the organs of special sense, and with the brain and its functional activities. It is the application in the human body of Christ's parable of the talents:

“For the kingdom of heaven is as a man traveling into a far country, who called his own servants, and delivered unto them his goods. And unto one he gave five talents, to another two, and to another one; to every man according to his several ability; and straightway took his journey. Then he that had received the five talents went and traded with the same, and made other five talents. And likewise he that had received two, he also gained other two. But he that had received one, went and digged in the earth and hid his lord's money.”

The reader will recollect the application of the parable—the one who had used his talents found them increased ; the one who buried his, had taken away from him that which he had. The divine Teacher enunciated a law as wide as the universe, and as applicable to physical and mental growth, as to moral development. It is just as applicable to the training of the senses of the physician, as it is to the growth of the moral nature of man. The lesson is clear : if we want anything, we must work for it ; if we will not work, we lose that we have.

Man has conscious life in his brain and through his senses. Take away his senses, and he has lost all communication with the world without. Through his senses he has pleasurable life, and it is deep and broad in proportion to their development. One would think that this would be sufficient incentive to their full development. But, unfortunately, men dislike work, not realizing that even this will prove a pleasure.

It is the continued and orderly exercise of parts that gives them increased capacity. Not by fits and starts, but continuously, day by day, week by week, month by month, year by year. The organs of special sense have in them a mechanism for skilled use, as well as for the gross purposes of life, and it is this skilled use we purpose to call forth in diagnosis.

Man has five senses—of touch, of sight, of hearing, of smell, of taste—all of which are useful in this study, and all require training. The physician of unskilled touch, sight, hearing, smell, taste, can never be successful. It is hardly necessary to give examples of this, as every reader's experience will show it a truism, but a few may stimulate thought.

In the obstetric art the skilled *touch* is the important element of success to the accoucheur. Without it he is groping in the dark, and is obliged to sit passively by the bedside and wait. He can not know, and of course can not give intelligent assistance when assistance may be required. In the same way the unskilled touch could never use a knife in surgery, could not pass a catheter, could not recognize the *variations* of the pulse, could not determine the condition of the skin, could not do a great many things that might be done if the touch were educated.

The untaught eye can not distinguish the variations of form, size, color, and other physical properties of bodies, which tell of condition, and functional activity. To the extent that it is uneducated the man is blind, and of necessity is groping in the dark.

The untaught ear has no use for the beautiful mechanism that adapts the organ to receive the varied impressions of sound. It can hear thunder, and it can hear noise, but to the "concord of sweet sounds" it is deaf. In medicine the ear requires education by use in order to detect some of the minute sounds, as the "respiratory murmur," and a still further education to detect the minute shades of difference in sound, which tell of disease.

The same may be said of the educated senses of smell and taste. The uneducated nose may recognize the genus stink, but has no power of analysis; as it may recognize fragrance, and have no pleasure from it. To the uneducated taste all substances are savory, or unpleasant, and with this gross classification the sense is satisfied. To the educated taste there is every gradation of the one and the other, and a power of discrimi-

nation that is sometimes really wonderful in its acuteness.

HOW MAY WE CULTIVATE THE SENSES?—This is the really important question, though the answer has been partly given in the above study. We cultivate the senses by continuously using them, and their education is the work of months and years. We can always find objects to exercise them upon, the training school is all about us, and we have only to make intelligent use of the facilities at our command. It is well, however, to have an intelligent plan, and follow it up assiduously, recollecting that "time, patience and perseverance will accomplish all things."

The senses are intimately associated with the brain, and their education implies a mental training as well. Whilst we develop the organ of sense by use, we develop the brain upon which the impression is made, and the higher brain which takes cognizance of, and analyzes the sensations. The development is thus a double one, and both are essentials in correct diagnosis. A plan presupposes thought, the act of the rational mind, as well as orderly activity.*

***SENSATIONS AND JUDGMENT.**—(That the reader may have before him a brief synopsis of the physiology of sensation, I give the following description from Huxley's *Physiology*.)

"In explaining the functions of the sensory organs, I have hitherto confined myself to describing the means by which the physical agent of a sensation is enabled to irritate a given sensory nerve; and to giving some account of the simple sensations which are thus evolved.

"*Simple sensations* of this kind are such as might be produced by the irritation of a single nerve-fibre, or of several nerve-fibres by the same agent. Such are the sensations of contact, of

THE TOUCH.—The tactile sense has its highest development in the hands, and it is in this locality, especially, that we purpose cultivating it. Delicacy of touch is associated with a normal condition of the skin, and necessitates care of the hands. It does not mean a life of idleness, but it means proper protection from cold, cleanliness, and an avoidance of such work as thickens the epidermis, or gives it unnatural hardness. "Clean hands and a pure heart" is a gospel expression that we can well apply to medicine, both essentials. Show me the physician with rough, unpleasant, grimy hands, and I will show you the man who is unsuccessful in his calling, and is being gradually imbruted in his nature. The hand is the characteristic feature of man, and is the outer expression of the reason within, and the spirit that is above the beast. A French writer once remarked, "Show me the man's hand, and I will tell you what manner of man he is."

A plan of use? It suggests itself at once—we will exercise our touch upon every object we come in contact with. Here are objects large and small, long and short, rough and smooth, of varied form, with special inequalities of surface, of varied consistence, and we

warmth, of sweetness, of an odor, of a musical note, of whiteness, or redness.

"But very few of our sensations are thus simple. Most of even those which we are in the habit of regarding as simple, are really compounds of different sensations, or of sensations with ideas, or with judgments. For example, in the preceding cases, it is very difficult to separate the sensation of contact from the judgment that something is touching us; of sweetness, from the idea of something in the mouth; of sound or light, from the judgment that something outside us is shining, or sounding."

purpose feeling them until we can recognize them as well in the dark as in the light.

We take the bones of the skeleton, and learn to recognize them by the touch as well as by the sight. Our Profs. Freeman or Howe will tell you the bones as well by touch as by sight. We take the dead body, and train the touch to recognize every part, by its form and resistance. We take the living body, and learn to recognize the impressions given by the skin, fasciæ, muscles, bones, and by the cavities of the body.

Attention has already been called to the necessity of the skilled touch in the obstetric art. You know a vertex presentation by the impression made upon the fingers brought in contact with the head. You determine fontanelles and sutures in the same way, and thus know the position. The nates give a different impression, and the finger recognizes the genitalia of male and female, as additional evidence. It recognizes a shoulder or elbow, a hand, a knee, or foot. How? Not intuitively; we have no natural knowledge of this kind, it is cultivated. Shall we wait until in obstetric practice we learn and acquire a skilled touch? That would be very bad policy, especially for our patients. The sense of touch is first trained by general use, and then we find opportunity upon the child already born, to acquire the knowledge of how a cranium, suture, fontanelle, nates, genitalia, shoulder, elbow, hand, knee, foot, feels—it is easy enough to find the opportunity, if one is inclined to learn, and it is easy to get this necessary skill in obstetric diagnosis if one is inclined to improve his opportunities.

SIGHT.—The sense of sight is one of the most important in diagnosis, and it, like others, requires education,

both as to the eye which receives and the brain upon which impressions are made. The eye receives impressions of color, and by education learns to detect the form, size, distance, and many of the physical properties of objects.

Color being one of the prominent characteristics of health and disease, the ability to accurately distinguish colors must be a great aid to the physician. The uneducated eye receives the impress of color very much as it does light and shade, attaching about the same meaning to it, but when trained by use, it readily detects slight variations.

It is quite easy to form a cabinet of colors, from natural objects which may be studied in detail, and this is suggested to the reader in preference to giving the color sheets here as first intended. The vegetable and insect worlds furnish them in great abundance, and specimens can be readily preserved. Quite soon the eye has learned to distinguish color from light and shade, and in a few weeks will become quite skilled, and yield much pleasure by the habit of observation thus acquired. There is nothing trivial in nature, and nothing so poor or worthless that it should not be known; this is especially true to the physician because he must be a student of nature, to be able to deal with nature's greatest work, the human life.

The practical education of the eye to color is completed upon the human body. We find distinct varieties of color in health—of skin, of mucous membranes, of parts where the circulation is superficial, showing arterial blood, of veins, of the eye, the nails and the hair. We want to learn to know the healthy man by his color, and we may know him by this.

There is also abundant opportunity to educate the eye to the variations of color in disease, so that they will be readily recognized, and their true meaning known. We may procure types of these morbid colors, so that we will be enabled to refresh the memory with them. Some of these will be given further along in this work, but the reader is advised to select samples of other colors for himself.

The training the eye to the determining of size is not so important, yet will be found quite useful. One physician will recognize a swelling, which evidences local disease, which another has failed to notice. So one will recognize a fullness of skin, of cellular tissue, of mucous membrane, of tongue, which another fails to see.

Training the eye to recognize form is very important, both to the physician and surgeon. The trained eye of the surgeon at once detects a deformity, and determines its cause, whether from fracture, dislocation, or structural disease. The trained eye of the physician should be able to recognize at once the general form of health, in the posture and expression of the patient, and the evidences of disease in the changes of form, in position, in sitting, lying, in the position of the limbs, and in the expression of the features. The trained eye recognizes changes in the form of the tongue, which express conditions of disease, and call for special remedies.

HEARING.—Physicians do not seem to have realized the importance of the ear in diagnosis. It is true that we have a system of physical diagnosis for diseases of the chest, which the student is advised to learn; but,

unfortunately, the advice is not supplemented by the lesson we are trying to teach—that these organs must be educated. The student applies his untrained ear, and hears nothing, or is unable to distinguish variations in sound, and becoming disgusted, gives physical diagnosis over to the expert or the specialist. Even if he persists in trying to learn, he finds that he can not hear the sounds described in the books, (simply because there are no such sounds produced), and is thus discouraged.

All nature is vocal with sound, and the sounds are the expressions of life. The old Hebrew poet recognized this fact, and gives expression to it—even “the morning stars sang together.” All nature is vocal with sound, but to the uneducated ear it might quite as well be still, for it expresses naught to him. Train the ear, and educate the brain, and we have a “concourse of sweet sounds,” taking the entire range of life, expressing all its feelings, its hopes, its fears, its griefs, its cares, its pleasures, its pains. It recognizes the love song of the bird, the tone of wedded bliss, the gush of parental affection, the cry for assistance, the shriller cry of assault, the song of victory, the wail of defeat, and the moan of death.

There is a fascination in the study of sound when once commenced, that will carry the observer on, and he will find a continued reward from it. If we take up the single study of the expression of animals in their cry, we find it of wonderful interest. We learn to recognize the speech of bird and beast, though we may not have slept with the fairies, as did the little boy of old. The cry of pain in the animal kingdom is so expressive, that it will be recognized at once, and pretty soon we will find ourselves locating and giving charac-

ter to the disease by this expression. One of the most striking examples of this I have ever witnessed, was in the case of a pet goat that was poisoned by eating paint. The cry was as expressive as that of a child, and one involuntarily located the wrong in the intestinal canal—it was lead colic.

“Ears ye have but ye hear not,” is applicable to the physician in ordinary. He is diligent in questioning the sick, and seems to think there is wisdom in the thoughts of the poor sick brain. The expressions of the voice, which tell the condition of the brain, and of the life of the man, to a considerable extent, is never heard, the doctor is deaf.

In auscultation, the first lesson is in learning to hear. It requires close and continued study to hear the respiratory murmur distinctly, and this study must be continued if we expect to recognize the variations of this and the sounds produced in the bronchial tubes. Skill in physical diagnosis does not come by nature; it is the result of study, and the education of the ear and brain. No man can expect to succeed in it unless he is willing to give months to it, first to educate the ear to the hearing and analysis of sound, and next to the hearing and analysis of the sounds heard in the chest.

SMELL.—Of still less importance is the sense of smell, and yet it has its place in diagnosis. A good nose is a good thing, and the sense of olfaction should not only be a safeguard to the individual, warning him of noxious influences, but should be a source of pleasure as well. To some extent this sense is instinctive, especially as it warns against irritant substances, and leads to their avoidance. But it is one that may be educated to a

very high degree. We have examples of this in some varieties of merchandising. The wine merchant grades his wine by its *boquet*, as well as the taste. The tea dealer will classify his wares, and price them, by their odor, as will the fancy grocer with a majority of the edibles he deals in.

We want a good nose for the purposes of diagnosis, and we especially want a good nose that it may look after the hygienic surroundings of our patients. There is an abundance of bad smells about the sick room, some peculiar to the condition of disease, and some the result of want of cleanliness and ventilation. We want to know them, and to do so we require an educated nose.

What is an educated nose? It is one so trained by use that it transmits sensations to the brain, which has also been trained by use to receive and analyze them. In other words, it is the association of brain and nose in the work. This sense is educated in the same manner as the others. We find odorous objects, and use this sense in their cognition. Pursuing the study we learn to discriminate between odors, and to recognize them immediately, and the character or condition of bodies they express.

It will require but little training to enable this sense to detect the unpleasant surroundings of a patient. The first impression of the air of the sick room tells of a want of ventilation, of a deficient supply of oxygen, a superabundance of carbonic acid gas, and a surplus of foul gases. The nose not only recognizes these wrongs, but will insist upon their abatement. It says, open the windows and doors, let in the sunlight, build an open fire, and wash up. There is no mistaking the language,

and the physician feels that he must carry out its orders.

It recognizes a want of bathing upon the part of the patient, dirty clothing, dirty bed-clothes, a foul chamber utensil under the bed, dirty dressings, dirty or bad food, dirty medicines, and says in unmistakable language, get these things away. "Cleanliness is next to godliness," and of far more importance in the recovery of the sick.

It will also point out conditions of disease, and talk to you of special medicines. It says, typhoid, sepsis, loss of life and breaking down of tissue plainly; and suggests for your consideration an individual of the group antiseptic—chlorate of potash, sulphite of soda, sulphurous acid, carbolic acid, baptisia, permanganate of potash, etc.

TASTE.—Whilst the sense of taste is a good thing, and should be well cared for, we do not propose to make much use of it in medicine. It is well, however, to use it upon the food prepared for the sick, because we find a great many wrongs here. People have not lost the old impression that the sick need no food, and that it makes but little difference what kind is given, or how it is prepared. If the physician does not look after this, he will find many times that his patient is being starved because food is unpalatable, or so badly prepared that it is indigestible, or so changed in character, that it really does the patient a wrong.

If the physician has a right appreciation of the necessity of good food, and the nurse or friends know that he will make it his business to look after it, and see that it is well prepared, they will probably use

more care, and will ask for information when it is required.

There are some things that the physician will do well not to cultivate a taste for or in. He should not be a connoisseur in liquors. It is far better that the patient run the risk of getting bad whisky, brandy, or wine, than that his medical attendant should have acquired the ability to determine for him. If there is any one road shorter than another to want of success, loss of character, poverty and wretchedness, it is the habit of tippling. The road seems especially broad, smooth and direct to the doctor, and he may well apply the old Latin quotation from Virgil: "*Facilis descensus Averni*"; and the second line—"but to escape is indeed a work of difficulty."

We have thus briefly examined the means by which one is prepared for the practice of medicine. The reader will have noticed that we place great stress on self-education, as the basis of skilled diagnosis and therapeutics. All knowledge is available in medicine, and we do not wish to depreciate the ordinary medical course of study, and would advise that the study of medicine and the collateral sciences should be carried as far as possible—and it is possible, even with the busiest man, to make very considerable attainments outside, as well as inside the range of studies usually pursued. Still, unless the physical organism be trained to use, our other education will prove a dead letter. It is the means that brings man in relationship to, and gives him cognizance of his surroundings and the world at large. He not only has knowledge of things through his senses, but his practical knowledge is in proportion to their education and acuteness.

In the study of disease it will be best to change the order in which we have noticed them here. The physician sees his patient first, and then the examination commences with the sight, touch, hearing, smell, taste. This may be regarded as the natural order, and we will observe it in the further study of the subject.

THE USE OF THE SENSES IN THE DIAGNOSIS OF DISEASE.

It is well to notice that we have a two-fold object in studying. We wish to determine the locality and nature of disease—its pathology; but we also wish to determine those agencies which will oppose disease and restore health—its therapeutics. These are both important studies, and we do not wish to neglect either, yet the reader will see that the last is the practical one. If we can determine what will cure, we have accomplished the important object of medicine.

The means of cure have held a secondary place in medicine, and indeed it seemed sometimes that it held no place. Physicians would be very learned as to pathology, and able to divide and subdivide the lesions of function and structure until they would be “an immense multitude,” yet you could count their remedies upon your fingers, and these were of the olden time, devitalizing, and most absurd. You would find an immense volume on pathology and diagnosis, teeming with wisdom, and a therapeutics meager and feeble in everything but its power to do harm.

In this study we wish to make therapeutics occupy the first place, and the diagnosis will mean *remedies*, whenever this is possible. We do not care so much to affix a name, by which the wrong may be known, as to prefix a remedy by the means of which the disease will not be known. Or to put it in plainer form, the object of examination is to determine what will cure.

It is my opinion that we can so study disease, that its symptoms or expressions will talk to us of individual remedies, and in language so plain that it can not be misunderstood. As this is the first object of study, we will keep it constantly in view.

DIAGNOSIS BY THE EYE.

The educated eye requires no prompting to do its work in the examination of the sick—its training is to this end. It takes in the appearance of the patient and his surroundings in all their detail. An effort of the will is required to make the mind attentive, and to co-ordinate the impressions, and reach conclusions from them.

It would seem unnecessary to say that many conditions of disease find outward expression through the muscular system and its investing connective tissue and skin, and that the physician should recognize them as soon as his eyes have made their examination, and yet the study of medicine is pursued as if this were not so. The doctor is very eager to see the patient's tongue and feel his pulse, and ask all manner of questions pertinent and absurd, but he is blind to these natural expressions, or if he learns, it is slowly and because the facts are

forced upon his consciousness. The reason is obvious—his attention has never been directed to it, and he has failed to study the subject as it was presented to him in practice.

This study requires an exercise of the mind, and that the reader may commence thinking to advantage, we will take some very familiar examples in the animal kingdom. Let us see, for a moment, how animals express emotion (the action of the mind in so far as it is developed). If you notice your dog or cat for a few days, you will see the clear expression of the entire range of the emotions, anger, fear, love, hate, joy, grief, consideration, conclusions reached, etc., and so plainly that you can make no mistake. Examine your horse, and you will find the same clear and striking language of expression. It is really wonderful, this voiceless language of animal life, and well repays study.

Supposing now we study the expression with reference to rest. You notice the dog taking his *siesta*, and carefully scan his posture and feature, and the idea of *rest* is so strongly impressed that you are sure you could not be mistaken. Whistle sharply, and notice the change to a position and expression of activity and expectant attention. Give his ear a sharp pinch, and you will see the evidences of pain as clearly as you would in the expression of man.

Think of the sickness you have seen among animals. The cat or dog with a "sick stomach"—before they have made an effort at vomiting you have jumped for the door to let them out. In ordinary ailments the drooping head, ears and tail, the expressionless eyes and face, and indeed the entire want of muscular expression, tells the story of impairment of life. Take

an irritative disease, of the intestines for instance, and the marked contraction of muscular tissue; the roughened coat, the strong drawn lines of the face, the retracted lips, tell you the *kind* of wrong.

Would you know if your horse was sick by his expression? I think you would, and if the subject had a little study you would know the kind of sickness as well. If you found him in the morning with drooping ears and tail, expressionless eyes and nose, you would hardly take him out for a day's ride. You recognize the expression of exhaustion from over-work, and feel so much for your companion that the stable is visited before retiring, and you probably know from his posture and expression in the stall whether he is resting, or in a condition that precludes rest.

If in driving you notice the ears drooping or turned backward continuously, you know there is something wrong. That the one means a wrong of exhaustion, and the other a wrong of irritation. If you notice his tail fall helplessly between his legs, you feel sure he is in no condition for work, is suffering from exhaustion. Suppose you observe an unnatural twist in his tail to one side, and you are quite as sure he is sick, the disease one of irritation, probably colic.

Carry this observation a little further, and watch the process of labor in animals, and you will be still more surprised at the wonderful mechanism of voiceless expression. You will be able to read the history as plainly as if expressed in language. The process of dilatation, the expulsive second stage, the tedious and difficult labor, the irregular and inefficient uterine contractions, the rigid soft parts, etc. Let us watch the case of a cow with puerperal fever, (yes, she has puerperal fever,

and other puerperal diseases as has the human mother), and you will see every phase of suffering, and see it so distinctly that you can not forget it if you would.

You notice a horse put out one of his feet in standing, and at once you think of disease. By the expression of the leg and its position, your accomplished horseman will locate the wrong for you; telling you whether it is in the shoulder, leg, knee, in the lower articulations, or in the hoof. How does he tell? Because the leg has a language, and he has learned it.

I have cited these examples as subjects of thought. This study requires thought, and the doctor is so little in the habit of right thinking with reference to human disease and diagnosis, and so certain that everything *must* be known, that it is better to get a basis for thought outside. If the reader recognizes the truth of these statements, and can confirm them by observation, he will say at once—"if disease is thus clearly expressed in the lower animals, there must be similar expressions in man, and the subject is well worth *my* attention." Disease has a voiceless language, and it is this we wish to study, but in order to do so successfully, the reader must get a basis for thought, commence to think of it, and find his illustrations in every-day life.

It is well to have clearly before us at the commencement, the objects of the examination, and the facts that may be determined; they may be classified as follows: 1st. The right life that we designate as health; 2d. The wrong of life that we call disease—the amount of vital impairment; 3d. The condition of rest; 4th. The condition of unrest; 5th. Disease of excitation; 6th. Disease of depression; 7th. Pain; 8th. The evidence of local disease, both as to structures involved, and kind.

DECUMBENCE.—In acute disease, the impairment of life is usually such that the patient assumes and keeps a horizontal position, as this requires the expenditure of much less power than any other. We use the term decumbence in preference to the old medical one, *decubitus*, and it is defined by Worcester as "The act, or the posture of lying down, prostration." In health the decumbent position is associated with the idea of rest, and when assumed at unusual times, with the idea of debility. Thus the first idea obtained from seeing the patient in bed is, that there is impairment of life. It would be a blessing to the sick if the physician could get this fact so thoroughly impressed, that he would refuse to depress the life still more by the administration of drugs.

Evidently this fact is one of much importance, and whilst the general expression may not be absolute evidence, it is among the best we have. If in acute disease the patient keeps his bed all the time, there is considerable impairment of life. If in ordinary chronic disease we find the patient frequently assuming the decumbent position, and maintaining it for a considerable time, we have to consider it an evidence of enfeeblement, and we husband our patient's strength, and employ the class of remedies known as restorative, with appropriate food.

Studying the patient's expression in bed, we find that it gives us additional information. If he lie on his sides, changes his position readily, holds his shoulders and extremities in position, we conclude that the impairment is not great as yet. But if we see him inclined to lie upon the back, or if upon the side that the shoulder falls forward or down, the arm falls and is

expressionless, the upper leg and hip show the inclination to fall, and even the soft tissues of the face droop, we are certain there is great impairment of life, and the treatment *must* be conservative and restorative. In the worst case, where the patient lies continuously upon his back, and is inclined to slip toward the foot of the bed, physicians usually recognize the approach of death.

There can be no mistake about the importance of the inquiry, or the character and certainty of these expressions. If we know that the life is feeble, we will carefully husband it, and guard against unnecessary expenditure. If we know the life is feeble, we will be sure to avoid unpleasant and harsh medicines, especially the class antiphlogistic. If we know the life is feeble, we will appreciate the importance of keeping the digestive organs in good condition, and giving the necessary food. If we know the life is feeble, and we have anything in our *Materia Medica* that will aid and strengthen it, we will realize the importance of its use.

To determine the condition of rest or unrest is of great importance. When a man or a part is sick, rest is necessary to recovery, and very much of the treatment used looks to procuring rest. The position of decubence is assumed to get rest, yet we find that many times it is not sufficient. It is well to know that we have to think of this with reference to sleep as when awake, for though sleep usually means rest in health, it may not give rest in disease.

It is well to get an idea of perfect rest in health, as a standard of comparison. Observe the child sleeping, and the perfect equipoise of the entire muscular system, and the natural position of the extremities show the condition of rest. Even when the child falls asleep in

a constrained and unnatural position, the body so adapts itself to it, that we have the idea of rest. A group of harvest workmen, taking their noonday rest on the grass under the shade of a tree, will give every shade of this restful expression, and is well worth our study. We learn something here that can not be told in words, but which serves as an excellent standard of comparison at the sick bed. Notice the position of a healthy person in sleep, especially how the body accommodates itself to bed and pillows, so that one position will sometimes be maintained the whole night, with rest to every part.

Now when we come to examine the sick, the condition of unrest is clearly expressed. The body does not accommodate itself to the bed, and the effort to maintain the position shows itself in the constraint of different parts. We see it in the evident contraction of the cervical muscles to hold the head in position; in the unnatural flexure of the extremities to maintain the body and themselves in position. We have every gradation of these expressions, from that which comes some time after the position of the body has been moved, when the patient is tired, to that which is so continuously marked, that we know the patient has not one moment's rest.

The position of the body also tells us something with reference to the fifth and sixth propositions—whether the disease is one of excitation or depression, especially as regards the circulation. This also is an important element in diagnosis, and refers us to appropriate remedies.

The condition of *excitation* is marked by constraint and undue contraction. We notice it in the expression

of the entire person, and of special parts. In the first it has reference to the entire body, in the second it is more the expression of local disease. The ideas that we get is of want of ease, and of constant effort on the part of the muscular system to obtain it. An unusual and constrained position of one or more of the extremities is quite a common expression. It may be but flexure of one leg, throwing it out or from the body, or a contraction and elevation of one shoulder, or a prone fore-arm and hand with marked muscular contraction, or an unpleasant constrained position of the head, with prominence of the cervical muscles, or we may have it in facial expression. Once the mind is directed to it, these features are quickly learned, and having the knowledge of health, we quickly determine the extent of the lesion.

The evidences of enfeebled function—*depression*, are just the opposite. Whilst in the previous case, we have an unusual excitement of the nerves, and of the vascular systems, in this we have deficient innervation, and impaired circulation. In this there is want of expression, the body lies, so to speak, as if no effort were made to hold it in position; parts fall of their own weight. This want of expression is noticed especially in the subcutaneous muscles, and in the skin, giving an unpleasant uniformity of surface, and a sodden expression to the soft tissues.

PAIN, or suffering, is expressed in every portion of the body, and one may learn to recognize it as soon as the eyes strike the body, and yet it would be difficult to describe the expression. When pain is associated with, or the result of undue excitation, the expression will be that just named under this head. But if asso

iated with, or the result of an enfeebled condition, either of the entire body, the part suffering, or the brain, the general expression may be quite the reverse, and will more resemble the exhaustion that follows excessive grief—one of anguish.

As has been clearly shown by Darwin,* expression is most marked in those muscles in most common use, or those associated with mental activity. Thus we would

*I have now described, to the best of my ability, the chief expressive actions in man, and in some few of the lower animals. I have also attempted to explain the origin or development of these actions through the three principles given in the first chapter. The first of these principles is, that movements which are serviceable in gratifying some desire, or in relieving some sensation, if often repeated, become so habitual that they are performed, whether or not of any service, whenever the same desire or sensation is felt, even in a very weak degree.

Our second principle is that of antithesis. The habit of voluntarily performing opposite movements under opposite impulses has become firmly established in us by the practice of our whole lives. Hence, if certain actions have been regularly performed, in accordance with our first principle, under a certain frame of mind, there will be a strong and involuntary tendency to the performance of directly opposite actions, whether or not these are of any use, under the excitement of an opposite frame of mind.

Our third principle is the direct action of the excited nervous system on the body, independently of the will, and independently, in large part, of habit. Experience shows that nerve-force is generated and set free whenever the cerebro-spinal system is excited. The direction which this nerve-force follows is necessarily determined by the lines of connection between the nerve-cells, with each other and with various parts of the body. But the direction is likewise much influenced by habit; inasmuch as nerve-force passes readily along accustomed channels.

expect to find the most marked expression in the face, and next probably in the hands and the extremities. If the reader will think for a moment, he will probably recall distinct expressions in these forms. He will especially recollect the common expressions of pain in the muscles of the orbits and frontal region from contraction of the corrugator supercilii, some of the fibres of the occipito frontalis, the orbiculars, and sometimes the zygomatic. His attention will only need be called to the forced contraction of the flexors of the hand during labor, the involuntary expression of pain, and to similar contraction in the feet. Indeed here is a most excellent study, and one may learn the natural history of pain by closely observing a few labors.

There is nothing like having a familiar example for study, and we may look still further at the phenomena of childbirth. I need hardly say that these expressions have the same meaning as in ordinary disease, though here we find them greatly intensified. Possibly we will get as good an idea of rest during the absence of pain in a natural labor, as we can get anywhere. And in a difficult labor we will get as distinct an idea of the state of unrest. We observe the pain finding expression in marked muscular contraction of the muscles of the upper and lower extremities and the forced flexion of the muscles of the hands and feet. We also see the expression of pain in the countenance, but in natural labors it is evanescent and not very marked. In difficult labors, especially where the pains are inefficient, we find the constant contraction of the "muscles of pain," and it is one of the evidences of this condition.

The evidence of *local disease* will be found in the position of the body with reference to removing pressure

from the part, or giving it support. This is sometimes so distinct that the attention is at once directed to the affected part. If the position of the body is such as to take off muscular pressure, we conclude that the disease is one of excitation. If, on the contrary, the position is such as to give additional support, we would think of it as being one of impaired innervation and circulation, possibly congestion. A man gives a diseased leg rest in the same manner as a horse. Flexion takes off tension, and if the disease is one of irritation, the limb is flexed. Disease of bladder or rectum will be indicated by flexure and crossing of one thigh over the other. Disease of the abdominal viscera, by flexion of the thighs upon the trunk and probably flexion of the trunk. Disease of one kidney will be announced by flexion of the body on the affected side. Disease of stomach by marked flexion of the trunk, and relaxation of the abdominal muscles and diaphragm, and thoracic respiration. Disease of one lung will be indicated by the flexion of the body on the affected side, and the drooping of that shoulder. Disease of the upper lobe of the lungs will be indicated by the falling of the shoulders forward, the additional curvature in the upper dorsal and cervical spine, and by abdominal respiration.

A very natural expression of disease is the involuntary movement of the hand to it. In typhoid fever, when the patient is seemingly wholly unconscious, we find the hand over the bladder in retention of urine, as it seeks the umbilicus when disease of Peyer's patches is marked. The child suffering from disease of the ear involuntarily carries the hand to the affected part. In acute disease of the kidneys the hands are carried to the loins. In some gastro-intestinal disease the hands

sometimes go to the mouth, and it seems as if the child wanted to get something out of its throat. It is always well in low forms of disease to carefully watch these expressions, as they give us early intimations of local trouble. And in diseases of children, when we have to depend almost wholly upon our own observation, it is also well to carefully observe every expression.

FACIAL EXPRESSION.—The fact has already been noticed that mental states find easiest expression in the usual channels of innervation, and through those muscles in common use. This is not only true of mental activity, but is also true of disease. There is no disease without a wrong of the nervous system, and I think I may add with truth, that there is no wrong of life that is not represented upon the surface through the nervous system. We may not be able to read it, because our senses have not been trained to observation, and we have not sufficient experience, but the fact that disease is thus expressed should stimulate to study.

The face will show clearly the *right* life that we call health; and the *wrong* life we call disease. If one will closely study the expression of the face in health, and compare it with the expression seen in sickness, this fact will be clearly seen. It not only tells us of impaired life, but also of the kind of impairment, and of the remedies that will remove the wrong, and restore health. It will be well to make this study with reference to—1st. The condition of the brain; 2d. With reference to the condition of the sympathetic nervous system, and associated spinal cord; 3d. With reference to the condition of the circulation and the blood; 4th. With reference to local disease; 5th. With reference to pain; 6th. Resistance of disease.

The **CONDITION OF THE BRAIN** is very clearly expressed in the face, and we have learned quite a good deal of its language. We may subdivide this study into—*a.* With reference to the circulation, determination of blood, congestion, inflammation, effusion; *b.* The nutrition of the brain; *c.* Its functional activity.

DETERMINATION OF BLOOD is marked by flushed face, bright eyes, contracted pupils, and general but moderate contraction of the facial muscles. The expression is one of excitation, and the patient is restless and uneasy.

The direct remedy is Gelseminum. The indirect means are those which relieve vascular excitement, and the old-fashioned derivatives—counter-irritation, etc.*

CONGESTION is marked by dull eyes, dilated pupils, immobile pupils, expressionless face, patient dull, inclined to sleep, and eventually coma.

*A bright and sparkling eye is as characteristic of a pleased or amused state of mind, as is the retraction of the corners of the mouth and upper lip with the wrinkles thus produced. Even the eyes of microcephalous idiots, who are so degraded that they never learn to speak, brighten slightly when they are pleased. Under extreme laughter the eyes are too much suffused with tears to sparkle; but the moisture squeezed out of the glands during moderate laughter or smiling may aid in giving them lustre; though this must be of altogether subordinate importance, as they become dull from grief, though they are then often moist. Their brightness seems to be chiefly due to their tenseness, owing to the contraction of the orbicular muscles and to the pressure of the raised cheeks. But, according to Dr. Piderit, who has discussed this point more fully than any other writer, the tenseness may be largely attributed to the eyeballs becoming filled with blood and other fluids, from the acceleration of the circulation, consequent on the excitement of pleasure. He remarks on the contrast in the appearance of the eyes of a hectic patient with a rapid cir-

The direct remedy is Belladonna. In some cases, and when associated with local disease with impairment of the involuntary muscles, Ergot. The indirect means are counter-irritation, dry or wet cupping, stimulant cathartics.

An intermediate *hyperæmia*, observed in apoplectic conditions is marked by fullness of eyes, which are protruded, fullness of face, prominent veins, and from contraction of the *platysma* a drawing down of the face and angles of the mouth.

For this condition the direct remedies would be Ergot, Lobelia in stimulant doses, Apocynum. The indirect remedies, dry or wet cupping, stimulant hydragogue cathartics.

INFLAMMATION is marked by still greater contraction of the muscles, especially those of the orbits and the frontal region, the deeper flushing of the face, the sharper expression of the eyes, which are dry and pinched, the contracted pupils, and as the life is impaired, by the appearance of constriction of all the tissues around the base of the brain.

The direct remedies in the first stage of an inflammation of the brain are: The proper sedatives, Aconite or Veratrum, and Gelseminum. These may be followed and aided by such as increase the action from skin, kidneys and bowels. The indirect remedies are such as may call the excitation to other parts.

culation, and of a man suffering from cholera with almost all the fluids of his body drained from him. Any cause which lowers the circulation deadens the eye. I remember seeing a man utterly prostrated by prolonged and severe exertion during a very hot day, and a bystander compared his eyes to those of a boiled codfish.—*Darwin*.

EFFUSION is marked by the dullness, and finally by coma. The eyes lose their sharp, bright expression and become dull; the muscles of the lower part of the face relax, as do the muscles that move the inferior maxillary and the mastoid. If the irritation still continues, the contraction of the orbiculars and frontal muscles persists, and the evident constriction or pinched appearance around the base of the brain becomes more prominent. If the irritation passes away with the effusion, these muscles gradually lose their power, and the upper part of the face assumes a dull, sodden appearance.

The direct remedies are small doses of Aconite and Belladonna, alternated with Apocynum. The indirect means will consist in cupping the spine, and the use of a stimulant hydragogue cathartic.

The **NUTRITION** of the brain is not so easily determined, yet I think we may reach correct conclusions in the majority of cases. The enfeebled nutrition will be marked by a want of expression, especially in the mouth, showing a want of decision. The eyes may have a normal appearance at first sight, yet as we watch them uncertainty is shown in their movements. In some cases, the expression when the patient's attention is not attracted, is very like that which follows exhaustion from excessive emotion.

SOFTENING OF THE BRAIN, so called, will be marked by a smooth, placid countenance, the want of expression in the forehead being especially marked. In some of these cases the tissues have their ordinary fullness, and sometimes the soft tissues of the face are unusually full, yet they look soft and flabby, and hang in unnatural folds.

ATROPHIC IRRITATION OF THE BRAIN is marked by

the pinched and uneasy expression of the upper facial muscles, the muscles of the orbits and the frontal region. The patient holds his head in a constrained position, frequently inclined to one shoulder, and the face turned to one side, giving the eyes an unpleasant expression of obliquity. The elevation of one eyebrow and the falling of the other, with an apparent divergence in the axis of the eyes, will locate the lesion in or near the cerebellum.

The evidences of *structural disease* vary with the situation and character of the lesion. They may be divided into irritative and atonic, the one showing marked contraction of some muscle or muscles of expression, the other a want of contraction, and consequent fullness and drooping. Sometimes in the severest structural disease there is no external expression.

The FUNCTIONAL ACTIVITY is very clearly shown in facial expression, and we will observe the entire range from normal function to furious delirium on the one hand, and to entire loss of function and conscious life on the other.

ACTIVITY is not only shown in muscular contraction, but in alternate contraction—the play of the emotions—of the muscles. This change of expression is one of the most familiar examples of mental activity. In delirium we observe that the play of the muscles is exaggerated, as indeed is the expression of all the emotions. This is especially noticeable in the expression and movement of the eyes, and their external muscles.

WANT OF ACTIVITY is expressed by want of contraction of the facial muscles; dull, immobile eyes, and full lids.

The condition of the *sympathetic nervous system* is

pretty clearly shown by the eyes, the orbital muscles, and the tissues about the base of the brain. The disease of irritation is shown by the contraction of the tissues which form the bed of the eye, the retraction of the eye, especially upward, the thinned and constricted eyelids, and the tissues about the temples. In some cases the pinched or contracted *alæ nasi* is a marked feature. The disease of atony is shown by the full, expressionless eyes, fullness of the lids, pallid and waving *alæ nasi*, and fullness and want of expression about the mouth.

A temporary want of sympathetic innervation that is rectified by Podophyllin, is shown in the fullness of all the tissues of the face, especially the upper portion, and by fullness of the veins.

For the disease of irritation, I prefer Aconite, Rhus, Bryonia, Muriatic Acid, Nitric Acid, the selection being made by the other symptoms present. Temporary relief is obtained by the local application of Chloroform before and behind the ears, and over the first cervical ganglion. The Chloroform is so applied as to prevent evaporation, and a change in the pulse will usually be noticed in a few minutes from its first application, and the relief is marked, and very frequently it lasts for some time.

The disease of atony is met by Nux, Phosphorus, Quinine, stimulant doses of Lobelia, minute doses of Podophyllin, Digitalis, more rarely Veratrum, the bitter tonics and food.

Whilst the expression of the face will give us pretty accurate information with regard to the circulation, we may obtain this information more directly elsewhere. If the cellular tissue is full, we think of Veratrum. If

it is shrunken, Aconite. If the expression of the eyes and associate muscles is dull, with fullness, we think of capillary congestion, and Belladonna. If the cellular tissue is full, the face expressionless, and the veins prominent, Podophyllin. If the eyelids are especially full, Apocynum. If the eyes have a pinched expression, dry in acute disease, secretion of tears in absence of fever, dry, shriveled epidermis, flushed left cheek, Rhus Toxicodendron. Right eyebrow drawn down, and expression of eye changed, flushed right cheek, Bryonia. These are the most prominent examples, and in each case there is a wrong of the circulation, which may be the predominant wrong. At any rate, the remedies thus indicated will prove curative.

With reference to the *condition of the blood*, we may find more direct expressions than in the face, yet these are not unimportant. The sodden tissue evidences poor blood and poor nutrition, as the firm elastic tissues show good blood and good nutrition. The *typhoid* condition of the blood will be clearly shown in the contracted and opaque skin in the one case, and the sodden inelastic tissues in the other. Pyæmia will show itself first, in the marked contraction of tissue about the base of the brain, sinking in of the bed of the eyes, and especially by retraction in the upper part of the orbit.

Some *local diseases* are clearly indicated by facial expression. Disease of the respiratory apparatus will be shown by the expression of the nose and accessory muscles. The lesions of irritation by contraction, the lesions of atony by relaxation. Any one who has watched the progress of an acute inflammation of lungs, of pleura, of bronchia, with irritative cough, must have seen the pinched expression of the nose, and the con-

traction of the alæ. So marked is this, that sometimes it seems to precede the trouble, and will be marked, before the disease of the respiratory apparatus has full development. The relaxed and waving alæ nasi gives an unpleasant impression of disease, and as before named, has reference to the lesion of innervation, as well as to impairment of the respiratory function.

The expressions of the mouth are associated with disease of the abdominal and pelvic viscera. Let us take the familiar examples of intestinal worms as an illustration. The full upper lip, with pallor, the white lines around the mouth, and picking the nose, is the most pronounced evidence of *ascaris lumbricoides*. This worm inhabits the small intestine, and the conditions present are atony of mucous membranes, with impaired function, and increased secretion of mucus, and at once we think of the associated symptoms and the intestinal wrong.

The remedies will be those which will give normal stimulation to the structures involved, Podophyllin, Santonine, some of the ordinary cathartics, the stomachic bitters, and sometimes the alkaline salts, or acids, as may be indicated by other symptoms.

If fullness in this case means atony and impaired function, and increased mucous secretion, it must mean it always, and we will always think of such remedies as will influence the small intestine and associate viscera, giving normal stimulation and circulation, and restoring functional activity. There is a peculiar expressionless mouth, or an expression of "loss of spirits," with a little depression of the angles of the mouth, that invariably means *Nux Vomica*.

Nausea is shown by depression of the angles of the

mouth, and slight incurving of the lower lip. If the tissues are full, we know that there is atony; if pinched and shrunken, that there is irritation and determination of blood.

It is a singular fact, and one not heretofore noticed, so far as my reading extends, that simulation of these expressions will provoke sensations in the parts referred to. The instance just given affords a marked example. Let a person draw down the angles of the mouth and incurve the lip, and he will be quite certain to feel nausea after a time. In two persons who tried it the sense of nausea was very marked; in one producing vomiting, in the other an arrest of digestion and headache. Try to simulate the frontal expression of pain, and it will be singular if you do not wake up unpleasant sensations somewhere, perhaps real pain.

Contraction of the orbicularis oris is usually found in some diseases of the reproductive organs, especially of the female. In chronic disease, there is distinct retraction from the other muscles of the face, and the entire tissues seem thinned. In some of these cases the zygomatic muscles are also prominent.

PAIN AND SUFFERING are distinctly expressed in the features, yet not always in the same way. Firm contraction of muscles is the most common expression. Thus every reader will recollect the contracted brow as evidencing pain, especially pain with irritation of the nerve centres. We involuntarily associate contraction of the structures about the eyes, and the wrinkled skin, with pain, or with suffering. But we have the evidence of pain in this region without muscular contraction; indeed there is the reverse, drooping of the tissues, the expression is sad, of the exhaustion that follows exces-

sive grief, and we are assured that there is enfeebled circulation in the brain, and the pain is the expression of atony.

It is very important to make these distinctions in order to select remedies. Pain is the result of two very opposite conditions—an excited circulation and an enfeebled circulation. In the one case we use *Gelsemium*, the sedatives, salines, *Rhus*, *Macrotys*, *Bryonia*, as may be indicated. In the other we use Quinine, stimulant doses of Opium, *Nux*, stimulants, tonics, beef tea or other histogenetic food.

Pain in the abdomen, pelvis, or lower extremities, finds expression in the mouth. Acute pain almost always finds expression in contraction of the mouth; when very severe the lips are firmly drawn in, the angles of the mouth retracted, and somewhat depressed. In some other cases, the angles of the mouth are drawn in, and there is that action of the muscles of the upper lip that gives it and the cheeks a full expression.

I hardly need call attention to the fact, that some patients *resist* disease by an influence of the will, and that sometimes this effort is very important. Others yield to it from the first, and thus favor its progress. Every one has made these observations, and will recognize the importance of knowing whether a patient resists or yields, as it may determine whether he will recover or die.

Darwin remarks that—"The firm closure of the mouth tends to give an expression of determination or decision to the countenance. No determined man probably ever had an habitually gaping mouth. Hence, also, a small and weak lower jaw, which seems to indicate that the mouth is not habitually and firmly closed,

is commonly thought to be characteristic of feebleness of character. A prolonged effort of body or mind implies previous determination ; and if it can be shown that the mouth is generally closed with firmness before and during a great and continued exertion of the muscular system, then, through the principle of association, the mouth would almost certainly be closed as soon as any determined resolution was taken."

I do not think any one can make a mistake here, and certainly it is important to know whether the patient is inclined to resist disease, and is determined to get well, or whether he is yielding, despondent, hopeless. The firm mouth means that the patient will get well if he can. The relaxed, drooping mouth, falling jaw, trembling muscles, show us the need of giving the patient courage, and strengthening the will power. It also shows the necessity of increased care to conserve vitality, and of the employment of restorative remedies.

EXPRESSION IN MOTION.—We not only find disease expressed in position, and in persistent muscular contraction, as heretofore named, but it is also shown in motion. We see a man standing or sitting, and observe that his soft tissues seem to sit on him like a badly fitting suit of clothes, and we think at once of impaired nutrition and degeneration of tissue. But it may be only a want of innervation, from habitual torpor of the nervous system. Set him in motion, and we will soon see whether this is so or not, for there are none so sluggish in this respect, but what they may be aroused.

We notice the movements of the person that we may confirm the diagnosis of expression, especially as re-

gards the important point of undue irritation and circulation, or impaired innervation and circulation. The quick, restless movement is characteristic of the first. The desire to lie still, and the slow movements, of the second. Possibly there is no evidence of disease more definite than this, and it should be allowed its full weight in diagnosis.

In some cases the rapid movement is but a means of removing excessive excitement of the brain and spinal cord, as in great grief or joy, or in case of severe, but temporary pain. In such cases it may be looked upon as a means of relief, for if the excessive emotions, or pain were pent up, the person might suffer severely from it.

But in other cases, whilst it tells of nervous irritability, the bodily movements give no relief, but even intensify the wrong, besides causing exhaustion. In these cases we endeavor to get bodily rest from the first, as a means of allaying the nervous excitation. Every one will have noticed the influence of the physician, nurse, or friend, who with kindness but firmness, insists on keeping still. The hand placed upon the body of the sufferer to give support, seems to strengthen the will power, and frequently with an effort on the part of the patient comes rest and relief.

There is a case of restlessness from an enfeebled and atonic condition of the nerve centres that requires notice. The unsteady movement, or the evidence of exhaustion following it, with the anxious, depressed countenance, tells the story. In the other case we will find almost continued tension of the muscular system.

Whilst in the case of irritation and determination of blood, we would employ the sedatives, with *Gelseminum*,

or remedies exerting a like influence, in that of atony, we would use Quinine, Nux, Phosphorus, stimulants, tonics, and histogenetic food—beef-tea.

Increased movement is not associated with structural, or even with severe local functional disease, so that unless it points to a wrong of the cerebro-spinal centers we do not regard it as an unpleasant symptom. In ordinary colic the patient is restless, and seems to get relief from motion, but in the severer forms of colic, called "bilious," and in acute enteritis, he remains very still.

In local disease the patient favors the affected part in movement. Frequently the first evidence we have of morbus coxarius, is the care shown in moving the leg and placing the feet in walking, and the elevation of the hip to remove pressure from the joint. Turning the toes inwards, both in movement and rest, has the same signification. One can readily distinguish a wrong of the pelvic viscera by the movement of the hips and extremities, showing the constant effort to prevent stress or pressure of the parts. This will be noticed in some uterine disease (irritative) as well as in displacements. In chronic disease of the kidneys, a forward curvature of the spine is frequently marked, and the patient is observed to put the hands upon the hips in rising from the chair, and sometimes in walking. If but one kidney is involved, or the liver, or spleen, we observe the slight flexure to one side, and the effort to save the part from the movement of muscles. Evidently the drawing forward of the shoulders—"winged scapula," is a symptom of similar import so far as the lungs or thoracic region is concerned. So certain is this, that with the marked falling forward of the

shoulders, and separation of the scapulæ, one may be sure there is some disease in the thorax. The head drooped forward has a similar import, though this is sometimes an indication of a wrong of the sympathetic nervous system.

In irritative disease of the cerebrum, or of the organs of special sense the head is flexed, but in disease of the medulla oblongata, cerebellum, pons and crura, the head is drawn backwards. Forced extension, or head drawn backward, will be recollected as a prominent symptom in cerebro-spinal meningitis.

In all these cases flexion and favoring the part in muscular movement are evidences of irritative disease, and indicate the treatment. First, remedies that influence the affected part; and second, remedies that remove excited innervation and circulation or functional activity.

In another class of cases, we will find flexion from or opposite the affected part, and the position of the body, and muscular motion is such as to give support and moderate pressure. The evidence in this case is of impaired circulation, congestion, effusion, and enlargement. It is safe to say that in the majority of these cases the remedies will be such as will give additional stimulus.

If one will closely observe the movements of the abdominal muscles, they may determine conditions of disease in pelvis or abdomen. The careful, slight movement evidences disease of the pelvic viscera if especially marked below—the chylopoietic viscera, if especially marked above. The full abdominal walls, with sluggish movement, evidences atonic disease and congestion.


If we examine with reference to the thorax, we will

find that free movement of the abdominal muscles and diaphragm, and but slight movement of the upper thorax, is evidence of disease of the upper lobes of the lungs. On the contrary, thoracic respiration, with but slight and careful movement of the abdominal muscles, evidences disease of stomach or liver.

We have already examined the expression of the face sufficiently, and the movements of the muscles do not give much additional evidence. Twitching of the muscles is an unpleasant expression, and indicates undue spinal irritation, or irritation of the basilar brain, the cause being frequently extrinsic. If of the mouth, our attention is directed to the abdominal organs; if of the upper lip and face, to the stomach; if of the nose, to the lungs; and if of the eyes and forehead to the brain and spinal cord.

The quick, involuntary movement of the eyes, refers us at once to the excito-motor nervous system, and at once we make an examination to determine the source of the lesion, its cause, and adopt means to prevent its further progress, and convulsions. The forced contraction of one of the muscles of the eyeballs, turning them upwards, downwards, to one side, or causing strabismus, evidences disease of the brain, which may or may not be associated with wrong of the spinal cord. The character of the disease may be determined by the expression of the eyes and associate muscles, or by other symptoms.

In diseases of children we will notice that sudden contraction of muscles and movement of parts is a precursor of convulsions. The quick movement of the hand, with contraction of the fingers, the quick movement of the lower extremities, with forced flexion, or



the quick movement of the head upon the pillow, or the sharp, jerking movement of the shoulder, should never be neglected.

This is but a mere outline of the subject, yet if it stimulates to observation, pointing out the way, it will serve its purpose. It is something one must learn from observation, and not simply store up in the memory. Indeed, unless the senses can be trained with the memory of facts, but little benefit will follow.

COLOR OF THE SURFACE.

As has already been named, the education of the eyes to distinguish colors, is of much importance in diagnosis; and the reasons will be obvious to the reader. There is no property of living bodies so sensitive as color. It is usually thought of as evanescent, changeable, fleeting, and the expressions of poetry in this regard, but represents the results of close observation.

The florist is guided by it to a very considerable extent. When he visits his green-houses in the morning, his eye closely scans the plants with reference to their health. Change of color, even so slight that it would not be noticed by an ordinary observer, is to him evidence of disease. He recognizes in change of color, the escape of gases from his flues, want of ventilation, a wrong in the temperature, the want of, or a wrong plant food, the presence of parasites, etc. He not only makes his "diagnosis" from change of color, but gives the prognosis as well.

The farmer, without any special training, or knowing why, recognizes the wrong color in his plants, and

speaks of their *sickly* appearance. If he has been a close observer, there is a something about their expression, and usually in their color, that tells him of the character of the wrong—from drouth, from wet, from too much heat, from cold, from atmospheric changes, from want of plant food, from excess of certain foods, or from a wrong kind. He recognizes the coming of blight, rust, mildew, and the various parasitic diseases, by these changes, before the diseases are fully developed.

These are familiar examples, and should prompt to diligent study on our part. For, if in the vegetable world, disease may be recognized in changes of color, should it not be a means of diagnosis in animals and man? And if so definite in determining the kind of disease in vegetable life, will it not be equally definite in determining disease in man? It will be noticed further that color has reference to the *life*; to the life of the blood, to the nutrition of tissue, to the oxygenation and decarbonization of the blood, and to the waste and excretion.

Even here the popular expression should have stimulated professional inquiry—he has a healthy color—what is the color of health? he has a sickly appearance, what is a sickly color? If the popular mind recognizes health in color, and disease in color, is it not well that we should make a careful study of it?

Color in man has two sources—*a*, from the blood; *b*, from pigment—and it is well to distinguish these. In the first case the changes of color are referred to wrongs of the blood; in the second they are referred to changes in the quantity or character of the pigmentary matter of the body. A simple division would be into—*a*, color

which has red for a basis; *b*, color which lacks red, is a shade of yellow, brown, black.

In making examinations with reference to the blood, we select parts where the circulation is free and the epidermis or epithelium is thin—where the skin is thin, and the mucous membranes delicate. We examine the nails, the lips, the cheeks, the hands, sometimes the feet, the tongue, and mucous membranes of the mouth.

What is the color of health as shown from the blood? It is rosy, a light shade of carmine and lake, and is clear, transparent, and offers no darkness, or admixture with blue, purple, or brown. As the finger is pressed upon the surface, or pressed over it, toward the heart, the rosy color is removed, leaving the structures clear and transparent, and the color comes back quickly when the pressure ceases. It is difficult to describe color in words, but if the reader will now make his examinations of health he may readily learn to distinguish the color of health.

The shade of rose color in mucous membranes differs somewhat from the skin, because it is modified to some extent by the pigment in the rete-mucosum. It is well to get a clear idea of it by examinations of the lips, the tongue, the mucous membranes of the mouth, and fauces. The color of mucous membranes is quite changeable to a slight degree, even in health, having shades of blue, violet, white, probably from the secretions of the mouth, and the food and drink; and we never regard these slight variations as diagnostic.

The pigment color of health varies in different races, and in different individuals. But if we say it is somewhat transparent and clean, we may express its character for all races. If we take a negro for example, we

will find the jetty black has a transparency and cleanness—glossy and smooth, which will be readily recognized. Let this man become sick, and the color grows dingy and opaque. If we take the olive or brown skin, the same cleanness and clearness of color is marked, and it seems so transparent that you may almost look into the skin. If you take the Caucassian, the brunette will show the same clearness in the skin pigment, and in the healthy blonde it seems as if you could look quite through the skin, it is so transparent. We may even notice these peculiarities in the color of the hair, as it shows health and disease like other parts, but modified more by local conditions.

In studying color, especially that given by the presence of blood, it is well to note that it may be changed in quantity (so to speak), and in kind. Change in quantity has reference to an increased circulation, and an increased amount of blood in the capillaries; change in kind, to the condition of the blood.

Simple *excess* may be noticed from any cause increasing the circulation to the surface, or to a part. We observe this excess of color in slight acute diseases, where the activity of the heart is increased, and there is general vascular excitement. It is not an unpleasant symptom, and points clearly to the arterial sedatives, Aconite and Veratrum, as the special remedies.

If a part of the surface shows this excess, we at once think of its relation to internal organs and functions. If of the upper portion of the face and eyes, we refer the wrong to the brain. If of the cheeks, one or both, we refer it to the respiratory organs or apparatus of circulation. If of the mouth and lower part of the face, we refer it to the abdominal viscera.

As the excess refers to vascular excitement, and means general sedatives, so these local excesses mean local vascular excitement and local sedatives if we have them. Thus for the brain it would mean Gelseminum; for the thoracic organs, Veratrum; for the abdominal viscera, Aconite, Ipecac, etc.

It is well to note the condition of the capillaries in this examination, and we may determine somewhat of their condition by the effects of pressure. If the capillaries are in normal condition, pressure should efface the redness, but it is but momentary. If the finger is drawn across the reddened surface we notice the white line made by displacing the blood, but it rapidly passes away, and the blood flows quickly in and fills the vessels. If now we examine the redness in scarlet fever in the same way, we will find that the fingers carried over the part with pressure, effaces the redness, and leaves a distinct white line, more or less persistent, as the fever is severe.

This shows enfeeblement of the capillary circulation, especially from the arterial side, and is an indication for Belladonna. In the larger number of cases, Aconite is the arterial sedative. The next best remedy to Belladonna is the Carbonate or Hydrochlorate of Ammonia.

If the capillary wrong is from venous obstruction, the color will be deeper, and the wrong will be associated with fullness of cellular tissue in many cases, and the white line made by pressure is not so clear. In this case, Podophyllin, Lobelia, Bryonia, are remedies.

We not only find an excess, as above named, but in other cases a defect in color, showing poor blood, leucocythæmia, or an impaired circulation to the surface. The

pallor of anæmia is shown in all parts of the body, and is associated with evidence of impaired nutrition. In the rare pathological condition, leucocythæmia, there is sometimes marked pallor, but usually it is disguised by increase or change in the pigment of the skin. In deficient circulation to the surface, we have want of color, but no evidence of want of blood in totality, or impaired nutrition.

Deepening of color—*dark red*—is usually associated with zymosis, and has reference to sepsis of the blood. It is associated with asthenia, and when observed it tells of impaired function. But it especially shows the need of acids, and in this respect refers to a direct remedy. It makes no difference where we find it most marked, its meaning is quite the same, of course modified to some extent by local disease.

If the reader will think for a moment of the cases he has seen presenting deep redness of the surface, he will recognize the truth of these statements. In typhus fever, the gravity of the disease is shown by the flushed skin—dark-red. If in smallpox, we find the skin assuming this dark-red color, we are confident the disease will be severe, showing depravation of the blood, and marked asthenia. If we observe it in measles, we anticipate trouble from tardy appearance of the eruption, depravation of the blood, respiratory trouble, and impairment of function. If seen in pneumonia, it talks to us of approaching “typhoid symptoms,” of a low grade of inflammation, and great prostration. So clear is the evidence, and so rare the exceptions, that it becomes one of the most reliable evidences of disease we possess.

The meaning is modified to a certain extent by the

results of pressure—whether the color is solid and unyielding as the finger is pressed over the surface—or whether it is effaced by such pressure as heretofore named in simple excess. In the first case it has reference wholly to the lesion of the blood, in the other in part to the lesion of circulation—at least the evidence is less grave.

If the dark redness is an evidence of zymosis—sepsis—it speaks directly of antiseptics as a necessary part of the treatment. It says clearly—this patient must be kept clean, his clothing and the bed-clothing must be frequently changed, and kept clean and sweet, all the surroundings must be clean, he must have good air, frequently changed by good ventilation. It means further, that proper means shall be employed for disinfection when this becomes necessary.

If the dark-redness is associated with asthenia and impairment of life, and gives us timely warning of such impairment, it will caution us against the use of all depressant remedies, or anything that will impair any of the important functions of the body. And it suggests the necessity of keeping the stomach in condition to receive food, and the proper selection and preparation of food during the progress of the disease.

But it directly refers to *acids* as remedies, and this is of much importance. Acids here are the antiseptics and antizymotics. We give Muriatic Acid, Acetic Acid in the form of good cider, and Lactic Acid in the form of whey, and we find the condition of the patient markedly improved. Muriatic Acid is especially the antiseptic, though the others have an influence in this direction.

The *dull purple* (bluish) of venous blood has reference

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to imperfect venous circulation, and imperfect decarbonization of the blood. It may be caused by disease of heart or lungs; if not we recognize a lesion of sympathetic and associate spinal nervous systems. It evidences an unpleasant condition of life, and one that should be removed if possible. In some cases the dullness of color becomes so marked, that we designate it as leaden.

If we find local structural disease to account for it, this will receive our attention. If it is sudden, and associated with præcordial oppression and constriction of the chest, Lobelia is the remedy. If less marked and chronic, we will think of Cactus, Digitalis and Pulsatilla. In acute cases, Chloroform counter-irritation around the lower margin of the thorax, gives speedy and marked relief.

In the lesion of cholera we will find the blueness of hands and feet dependent upon enfeebled capillary circulation, the blood being loaded with carbonic acid gas. If the condition of the blood can be so changed, as to enable it to circulate, this passes off. This blueness with pallor is one of the most marked indications for common salt as a medicine.

Want of color, with a shade of solid blue where the blood shows freely as under the nails, the lips, the cheeks, and thin skinned portions of the body, may be assumed to indicate the want of Iron.

A *violet* tint with increase of redness uniformly, or only where the circulation is superficial, is a prominent indication for Nitric Acid.

Deep color, with purplish, brown, or black tinge, is a prominent indication for Baptisia.

Color not deep, but muddy or dirty, of parts freely

supplied with blood, is an indication for Sulphurous Acid. If there is this dirty shade with pallor, we would use Sulphite of Soda.

When we come to study the local changes of color referred to the blood, we divide them into two classes, the one in which the change is to be referred to a lesion of some other part—sympathetic; the other in which it is dependent upon local disease. The reader will notice that the significance of color must depend very much upon this, for whilst the one may have no reference to the condition of the blood at large, or to any structural lesion, the other is wholly referred to the lesion of the structures, and to changes in the blood.

We always want familiar examples to show that a method of study is likely to prove advantageous—that is a basis of fact, and we will adduce the three familiar cases of—change in the color of areola of the nipple, the dark line under the eyes in certain conditions of women, and the white line around the mouth in some intestinal diseases of children.

Every practitioner will have noticed the darkened areola of the nipple as an evidence of pregnancy, but may not have had his attention called to it as an evidence of disease of the reproductive function. In wrongs of this function simulating spermatorrhœa, we will find this change of color marked, as we will in scanty menstruation with congestion, and in hypertrophy of the cervix uteri. Of course we do not look for this, except in the diagnosis of pregnancy, but in this case it is one of the most valuable symptoms.

If you should notice the deep color under or around the eyes in women, you would say at once there was a wrong of the reproductive organs or function, and you

would rarely make a mistake. If the tissues seemed dry, the eyelids sunken and contracted, it would be safe to say that the disease was one of irritation, and would probably be relieved by *Pulsatilla* and *Macrotys*, (especially if functional.) And if the eyelids were full, swollen, relaxed, that the disease was of congestion or atony, and would be benefited by *Hamamelis*, *Apcynum*, *Staphysagria*, *Phosphorus*, *Iron*, etc.

Many cases present themselves where we do not wish to suggest an examination of the reproductive organs at first, or there may be some reason why it should not be made at present, hence the importance of other means of knowing the character of the wrong, and the class of remedies we may select from.

If one should notice the white line around the mouth, with full pallid upper lip, full or contracted mouth, he would at once refer the symptom to a wrong of the gastro-intestinal apparatus. The reference is undoubtedly right, if we except the rare case in which the symptom is dependent upon lesion of the brain. There is a wrong of the stomach and bowels. What is the character of that wrong? If the structures are full, it is pretty surely one of atony—a want of innervation and a sluggish circulation. If the structures are constricted and pinched, the wrong is very certainly one of irritation, excited innervation and circulation.

Is it worth our while to read the evidences of disease in the patient's face? I think it is, especially when the remedies are at once suggested. The white line around the mouth—gastro-intestinal disease. With fullness of tissue—*Podophyllin*, *Hydrastia*, *Santonine*. With constriction and thinning of structures—*Aconite*, *Ipecac*.

But suppose we notice a peculiar bluish or leaden

tint to this white line around the mouth, and see a slight dragging down of the corners, we would recognize the gastro-intestinal lesion—remedy, Bismuth, or sometimes minute doses of Arsenic.

Increased color of cheeks has been noticed as a symptom of thoracic disease for thousands of years. What relation has this flushing of cheek to the condition of the lungs? Can you explain the nervous and vascular connections? Evidently we can not tell why, and I doubt if the evidence would be any more valuable if we could tell why. This is one of many examples that the interrogatory—why? is not always a profitable study in medicine.

We know the fact, that a habitual recurring flush of one or both cheeks has reference to an irritable or diseased lung. The persistent high color, even though it be a distinctly circumscribed spot, has a different meaning. If we notice this circumscribed flushing of the cheeks, our attention is at once attracted to the respiratory apparatus. Associated with frequency of pulse and increased temperature, it tells us of commencing tubercular deposit. In this case the one cheek is usually flushed.

It may be remarked further, that this symptom is always associated with a wrong of the sympathetic nervous system, especially in its relation to circulation and nutrition, and in phthisis we only find the bright, flushed cheek with irritation. Sometimes there is quite as marked pallor, and the evidence would be a want of innervation.

The bright-red flush of *left* cheek in acute disease is usually referred to thoracic disease, but does not always indicate it. It evidences a lesion of sympathetic and

spinal innervation, but is especially valuable as calling our attention to *Rhus Toxicodendron* as the probable remedy.

The deeper flush of *right* cheek is more frequently seen in disease of serous membranes and fibrous tissues, but is especially valuable because it points out *Bryonia* as the probable specific remedy.

Whilst the bright color of the cheeks, where it has reference to disease of the respiratory organs, tells us of irritation and activity of circulation, deep color indicates impairment of the circulation and of the life. The livid, purplish color in some cases of *angina pectoris*, may be taken as the type. We have it in much less degree in thoracic aneurism, in apoplexy of lungs, and in some very severe cases of asthma with congestion. The dark redness is always evidence of a difficult and imperfect circulation.

There is a *pinkish* color of parts freely supplied with blood, that is regarded by some as an unpleasant symptom. As this color becomes more pronounced, we observe it in the veins as well. In women we may usually refer it to a menstrual wrong, which will be corrected by the use of small doses of *Pulsatilla*, *Actea Alba*, *Helonias*. For the chronic lesion we think of *Phosphorus*, the *Hypophosphites*, the bitter stomachics, and food.

Among the things that old women know is--that prominent *blue* veins crossing the nose in children is a sign of feeble vitality, and it is quite as true as if a physician knew it. There is something wrong in the life when you observe these cutaneous veins showing the distinct and constant blue line, whether it is across the nose, at the wrists, upon the back of the hand, over the

breast or abdomen, or elsewhere. Whilst it may not point out any special medicine, it does prompt us to advise that the child have abundant out-door exercise, good blood-making food, and that it shall not commence study early, or be much confined until there is a much stronger and robust life.

Unusual blueness of veins is a very good indication for Iron. If associated with pallor of surface, we may select Iron by Hydrogen, or Valett's mass, but if there be deep color of tongue, Tincture of Muriate of Iron.

The color of the conjunctiva and sclerotic will sometimes give us information in regard to the circulation of the brain. If we find an injected conjunctiva (not the result of local disease), we conclude that the cerebral circulation is similarly affected. If the color is bright, and the surface looks smooth and moist, we have evidence of determination of blood. If the color is deep and the surface looks dull and dingy, or dry and pinched, it represents hyperæmia, with obstruction to the return of blood—the apoplectic condition. The dull, colorless eye is the best indication for Belladonna, though we use it when the eye is injected, with tortuous vessels.

In superficial disease, the color of the part is a means of determining its condition. If we take the ordinary symptoms of inflammation, increased color—redness—is one of the first named as constant. Given increased color, with heat, pain and swelling, and we say there is inflammation; but which of these will best tell us the real condition of the part? I should answer, color.

If the color is bright, healthy red, we know at once that the inflammation is simple, and is not very likely to work a very great wrong to the part, or to the body

at large. It tells us of irritation, determination of blood, and of activity of circulation; the second part of the wrong of circulation—stasis—is in but small proportion. It says, give general arterial sedatives, use local sedatives, get rid of increased heat, and establish secretion. The evidence is quite the same, whether we are looking directly at the inflamed part, or at some distant surface, that is influenced by sympathy.

If the color is deep-red and dull, we are confident there is marked impairment of life and arrest of circulation. The fact that there is too much blood in the part is evident, that the capillaries are enfeebled, and the circulation in them is sluggish or arrested, that change has commenced in the stagnant blood, and that the life of the part will be destroyed, unless these wrongs are corrected. It says distinctly, strengthen the general circulation, whilst you lessen its frequency, and conserve and sustain the life of the blood by rest and food. If a local application is to be made, it is now *stimulant*—we want to strengthen the life of the part. If we select an internal remedy that is to influence the part from the blood, this remedy must be stimulant or tonic in its character.

If the part assumes a blue or purplish color we recognize venous stasis, and an obstruction to the circulation from the part. With our attention called to the nature of the wrong, we will find its cause and remove it if possible. My attention was first called to this evidence of venous obstruction in a case of fracture of the forearm, with laceration of the hand, in which a roller was applied before the splints, yet not very tight. Inflammation sprang up in the hand, and the third day came this bluish discoloration, with a great deal of local

trouble. The roller was removed, and the difficulty slowly passed away. I have seen the same wrong arise from the position of an extremity being such as to impede the circulation of blood.

In some cases the wrong being general, venous impairment is cardiac. We do not know why, but we rarely find an impairment of the right heart, when the left is sufficient for the systemic circulation. Lobelia in stimulant doses exerts a very favorable influence in these cases. If there is fullness of cellular tissue, Apocynum may be associated with it, or given alone. If the wrong is from venous impairment, and is chronic, Hamamelis is probably the remedy.

The erysipelatous redness is so distinctive, that being once seen it can hardly be forgotten. The vivid coloration, evident dryness, shining appearance, give the beholder a sense of burning. It makes no difference so far as the significance of this coloration is concerned, whether we have the local inflammation of the skin or not, it refers us to a lesion of the blood, zymotic in character. If the surgeon find this tint of vivid redness on the edges of a wound, or the flaps of an amputation, he would be at once on the alert to get rid of the lesion of the blood. If the physician observed this erysipelatous flush on the cheek in inflammation of the lungs, or any where on the surface during the progress of an inflammation or fever, he might feel sure he would have a more than usually serious case to manage.

We may distinguish four shades of this erysipelatous redness quite well marked in many cases, pointing out the remedies for the disease of the blood, and the local inflammation. In the first the redness is quite vivid, and the edges of the local disease show a simple erythe-

matous flush, and the part does not look dry and constricted. Sometimes there is arterial throbbing of the part, and the pulse is full. In this case Veratrum is the general and topical remedy. In the second case the redness is very vivid, and the parts dry and constricted, with sometimes the appearance of a slight pustular eruption. The pulse is small, sharp, vibratile; the remedy is Rhus Toxicodendron. In the third case the redness has a deeper shade, sometimes vivid, sometimes dull. The remedy, both general and local, is Tincture of Muriate of Iron. The fourth case shows more or less of a blanched appearance, as the disease advances: sometimes in the centre, sometimes at the borders, sometimes of the deep structures—you seem to be looking through the superficial redness. In these cases the general remedy is Sulphite of Soda, the local remedy Sulphurous Acid, Permanganate of Potash, or Carbolic Acid.

The variations of *pigment* color in different individuals is so great in health, that it might seem almost impossible to get definite information from its variations in disease, yet I think we will find it quite as certain as other evidences of disease. Of course we must have a correct idea of normal pigment coloration, and some guide to the natural tint of the individual. Transparency and cleanness are the characteristics of health, whatever may be the shade. The lesions might be divided into those of excess, defect and perversion, though the last is the most important.

Excess of pigment, when it retains the clearness and transparency of health, is usually evidence of active life, and good nutrition and excretion. Of course outdoor exposure is always taken into consideration, as

causing an increase of pigment. Local excesses of pigment have a variable meaning, though if still clear and transparent we think of functional activity. If we take the areola of the nipple, the clean, transparent, deep color evidences healthy gestation, as does the deepened color over the gland. The increase of abdominal pigment has the same meaning, as has the increased pigment color of the vulva. Even the increased pigment of face observed during gestation is an index of healthy function. Not so the unequal and unpleasant brownish coloration known as *morph*.

The deep pigment coloration of the neck in brain workers is a sign of healthy nutrition of the nerve centres, whilst the want of pigment would indicate anæmia, and the dirty pigment would show a wrong of nutrition.

The coloration of the skin and hair have the same associations. The clear, transparent color is the evidence of health, especially of the skin. The deepened color is evidence of an active life, especially of the vegetative functions; whilst a loss of color is at once referred to impaired nutrition. Even the color of the hair is subject to slight changes, and one may learn to distinguish by this the condition of the nutritive functions. It is an unpleasant sign to find the hair becoming dull and sickly in color.

There is an increase of pigment distinctly brown, and in patches on various parts of the body, which is known as "liver spots." They generally make their appearance on parts covered by the clothing, and may be quite large and extensive. We refer them to a wrong of the bile pigment, and frequently find it associated with a wrong of digestion, and impairment of

the function of the brain. The remedy is Podophyllin, associated with its natural bitter principle, Bebeerina, (Hydrastia).

The brownish-yellow coloration is evidence of a wrong of the organs of digestion. We may find it only about the mouth or the face, or we may find it pretty general where the lesion is chronic. It refers us to Nux Vomica as the remedy.

Give us the same color, but dull and opaque, or with a leaden tinge of adjacent skin, and we again refer it to a lesion of the organs of digestion. The remedy is Chelidonium; Podophyllin, if the tissues show more than usual fullness.

The bright yellow of jaundice is a symptom of wrong of the liver. What the condition of the liver may be, other symptoms must decide. But in so far as the color is concerned, we expect to wash it out through the kidneys.

There is a peculiar sallowness with a tinge of green that indicates great impairment of blood-making and nutrition. The remedy is Copper; we usually give Rademacher's Tincture.

No one could mistake the opaque, tallow-like color of hypochondria, and associate states. It tells us of impairment of the digestive and blood-making organs, of nutrition, and of waste and excretion. There is a slow renewal of life, and the tissues are old and feeble. Very clearly in this case we want a more active "renewal of life," and we stimulate the processes of retrograde metamorphosis and excretion on the one hand, to remove the old structures, and see that the function of digestion is well performed, that we may have increased nutrition.

One could hardly mistake the evidence of the dingy, dull, grimy, dirty color of skin. It refers us to a wrong of the blood—"bad blood," and we conclude that the blood is as dirty as the skin. Of course it would not do to mistake the dingy, dirty skin of the "great unwashed," but this is not very likely. Soap and water will show the difference. In this case remedies to increase secretion, and sometimes to promote retrograde metamorphosis, hold the first place, though we do not forget the importance of improved nutrition.

There is a deepened tint of skin, dull and opaque, that is a very good indication for Arsenic or Phosphorus. The tissue seems to have lost life, and is inelastic. Dullness of color and opacity, may be regarded as the special features; and opacity where the color is lighter than usual may indicate the remedy.

If we have a distinct want of pigment, the want of color not dependent upon anæmia, or an enfeebled circulation of blood, we think of Sulphur as a possible restorative. Given in small doses, we sometimes find it exerting a marked influence upon the nutritive processes.

EXAMINATION OF THE TONGUE.

"Let me see your tongue," says the doctor at every visit, though what he expects to learn from "seeing the tongue" he would be puzzled to tell you, unless it was that the patient was "bilious." Of course habitually seeing the tongue in disease will, unconsciously, many times, grow some knowledge of its diagnostic value, and if the physician is a close observer, it will give him valuable aid in determining the character of

disease. But many men are so little in the habit of using their eyes, and thinking for themselves, that they learn but very little.

If we think for a moment, we will see that the tongue may tell us of—*a*, the condition of the digestive apparatus; *b*, the condition of the blood; *c*, the condition of the nervous system and *d*, of the functions of nutrition and excretion. As these are important inquiries, indeed just the things we want to know, we will make the tongue talk as plainly as possible.

We find the expression of disease in—*a*, its form; *b*, its condition of dryness or moisture; *c*, its coatings; *d*, its color; and *e*, its motion. It is well to think of the subject in this methodical way, even though we are not able to follow it wholly in this study.

The common idea of physicians is, that the tongue expresses the condition of the stomach and intestinal tract, and it should be examined with reference to this; few think that it may give further information. Being a part of the digestive tract, supplied by the same nerves, and invested by the same mucous membrane, we would naturally expect it to show something of the condition of parts below.

If we say that its condition may be taken as the type of the condition of parts below, we will not be far out of the way. True, there are many exceptions, but the rule is a very good one, and will hardly lead to serious error. The mind at once recognizes the changes of form, movement, condition, color, and secretion, as expressions of local disease. It will not be far wrong, if it recognizes them as expressions of disease of the entire digestive apparatus.

Change of form is quite expressive, and rarely leads

us into error. The *elongated* and *pointed* tongue expresses the condition of irritation and determination of blood to stomach and intestinal canal very distinctly, and it is safe practice to give it full weight, and be very careful in the administration of remedies. As it is associated with excitation of the nerve centres, this is to be taken into consideration, when we value the evidence with reference to the stomach and bowels. If we observe this change of form early in the disease, we not only anticipate unpleasant gastric irritation through the sickness, and use care in avoiding irritants, but we employ means to remove it. Among these may be named *minute* doses of Aconite, Ipecac, Hydrocyanic Acid, Peach-bark infusion, small doses of Rhubarb, and Bismuth.

The *full* tongue, broad and thick, is the evidence of atony of the digestive tract, especially of the mucous membranes. In this case the stomach and intestinal canal tolerates the common medicines given, and the use of cathartics is less harmful, and may be more beneficial than in others.

The *pinched, shrunken* tongue expresses a want of functional activity in the digestive apparatus. It is the tongue of advanced acute disease, and is usually associated with dryness. "Want of functional activity" hardly expresses the condition, for the life of the digestive apparatus has suffered to such an extent, that there can be but little function. Whilst it is one of the indications of want of food, it causes us to be very careful in its selection and administration, giving small quantities at a time, and at such periods as the unpleasant symptoms are least marked.

The fissured tongue in chronic disease points us to

lesion of the kidneys inflammatory in character. In some cases the fissures are transverse only, but in severe cases they are somewhat irregular, and by pressing the tongue down it is seen to separate in irregular patches of prominent villi. The symptom is so definite, that one may be assured of inflammation when this tongue presents.

The fissured tongue in the advanced stage of febrile diseases refers us to lesion of the kidneys, or irritation of the nerve centres. In many cases we find a wrong in the secretion of urine, and close examination shows a condition of kidneys bordering on inflammation. It deserves careful consideration, and especially means to place the skin in better condition, and to allay irritation of the cerebro-spinal centres.

The conditions of *dryness* and *moisture* are important evidences of the condition of the intestinal tract. If the tongue is dry, we are sure the stomach and intestinal canal can do but little digestive work, and we give it as much rest as possible. In such cases food is always given in fluid form, and usually above the temperature of 100°. It is also carefully selected and prepared, that the labor of digestion may be as small as possible. If the tongue is dry we are confident there is want of secretion from the intestinal canal and associate glands, and indeed that there is a condition present which will prevent the action of direct remedies to favor secretion. It is most absurd to employ cathartics in such cases, unless the object is simply to remove irritant accumulations. Moisture, on the contrary, expresses a condition favorable to functional activity. True, there may be impairment of function, as when the tongue is full, showing atony, or heavily coated, showing increased

mucous secretion, or dirty, showing depravation of the blood and secretions.

If in acute disease with dryness of the tongue, we observe it becoming moist, we are confident of improvement, of the establishment of secretion, and indeed of all the vegetative processes. Having this meaning, it is nearly always regarded as a favorable symptom.

The coatings of the tongue are observed with care, as they are thought to be especially symptomatic of the condition of the digestive tract and the "liver."*

***APPEARANCE OF THE TONGUE AS A SYMPTOM OF DISORDER OF THE STOMACH**—The aspect of the tongue was held by the older writers in medicine to be one of the most important criteria of the state of the digestive organs; and its morbid appearances were therefore carefully observed and minutely described by them as indications for both diagnosis and treatment

In more recent periods, however, the value of the evidence furnished by this organ has been, if not entirely denied, at least so greatly depreciated, that it seems desirable to ascertain what are the limits of our knowledge with regard to the association of changes on its surface with those occurring in lower portions of the alimentary canal.

The question appears to be capable of being resolved into three principal divisions:

1. What are the nature and causes of the alterations in the tongue which have been regarded as diagnostic of affections of the stomach?
2. In what other diseases, occurring independently of stomach affections, are these changes observed?
3. What is the nature of the alterations of the digestive organs with which these conditions of the tongue have been found to be associated?

The appearances of the tongue which have been most commonly believed to be associated with the diseases of the rest of the intestinal canal, are (a) an increase of its epithelial covering:

Whilst there is much of error in the common ideas of "furred tongue," something valuable may be learned.

The vivid whiteness of the tongue, evidently a change in the epithelium, evidences simple functional wrong, and is associated with the febrile state. If observed at other times, it may be taken as an indication that the stomach and digestive tube want rest.

The thin, transparent mucoid coating of the tongue, evidently upon and from the secretions of the mouth, evidence enfeebled digestive function, frequently from intemperate eating or drinking.

or "fur," which may present various degrees of thickness, and different shades of color; (b) enlargement of its papil; (c) various shades and degrees of redness of the mucous membrane; and (d) certain alterations in its size and shape.

(1) The fur or coating (*saburra*) has been shown by microscopic examination to consist of epithelium scales, which are often fattily degenerated, and sometimes massed together, of free fat drops, and of confervoid growths; of these the largest proportion is formed of the epithelial cells which are derived from the covering of the organ together with the saliva and buccal mucus, which in drying form a thick glutinous material, conglomerating the other elements into a mass.

The fur may be of greater or less thickness, dry or moist, uniform, or accumulated more particularly at the posterior portions. It is sometimes deeply fissured by sulci, which may extend into the mucous membrane beneath. At other times it may separate in flakes from the surface, which then may look raw, and of a deeper red than natural, but which may, when the process of separation is gradual, present no deviation from the normal appearance.

Mixed with the fur may be sometimes found pigment, blood corpuscles, mucous or pus corpuscles, or the remains of vegetable and animal portions of food.

The *fur* which has consistence is evidently upon the tongue, and can be scraped off—evidences impairment of function, and the wrong is generally in proportion to its thickness. If uniformly distributed it may be regarded as having reference to the entire intestinal tract; if restricted principally to the base, we think of greater wrong of the stomach. The *heavily loaded* tongue would call our attention to accumulations in the bowels, and would prompt to means (mild) to secure their evacuation. The *heavily loaded* tongue at the base calls attention to accumulations in the stomach, and

The color may be white or milky, or may present various shades of yellow or brown.

The nature and cause of some of the changes in color are very imperfectly understood. Some of them arise from articles of food, medicinal substances, tobacco, etc.; a large proportion, however, are caused by slight hemorrhages from the gums; while some others, and especially those occurring in fevers, remain unexplained. Excepting, however, those cases where there is direct pigmentary discoloration from jaundice, when other tissues participate in the change, there is no foundation for the common belief that a yellow fur on the tongue has any necessary connection with hepatic disorder.

As regards the chief causes to which the production of this fur is attributable, may be mentioned:

(a) Idiopathic conditions in which the tongue of some persons may, consistently with apparently perfect general health, form and throw off a much larger amount of epithelial covering than is ordinarily the case; inquiry should, therefore, be directed to this point before any general conclusions are formed respecting the indications to be drawn from its presence.

(b) States in which a coating is formed on the tongue by the simple drying of inspissated mucus and saliva, owing to the mouth being kept open, as is often the case during sleep.

(c) Conditions of irritation in the mouth itself, giving rise to

suggests the use of an emetic to free this viscus, and stimulate normal innervation and circulation.

Yellowness of coating is thought to arise from wrong in the hepatic function, and to point to the use of "liver remedies." Whilst it may have this reference in some cases, it is well to avoid the usual cholagogues. It may be said to call for *Nux Vomica*, small doses of *Podophyllin* and *Hydrastine*. A dull, leaden, yellow fur is an indication for *Chelidonium*. A dull, cheesy look-

an increased production of epithelium on the cheeks, gums and tongue, and which, from their similarity to the state of other mucous membranes, where increased secretion, attended with shedding of the epithelial covering, is the result of irritation or subacute inflammatory action, are usually termed catarrhal. The belief that this is the true pathology of this state, is also favored by the coincidence, in many such cases, either of a general redness of the surface, beneath the thickened epithelium, or of hyperæmia and enlargement of the papillæ, especially of the papillæ fungiformes of the lateral and anterior portions. In some instances, also, the inflammatory state is further evidenced by the production of aphthæ, giving rise to slight and superficial ulcerations, with a reddened base, and often surrounded by a reddened margin.

Many of these conditions of the tongue may, however, be due to local causes, such as carious teeth, or other sources of irritation to the fifth nerve, or to accumulation of food around the bases of the teeth, or to medicinal agents affecting the salivary glands and mouth, as Iodide of Potassium and Mercury, or to the habit of smoking (though this does not ordinarily produce a thickened epithelial fur, nor hyperæmia of the papillæ fungiformes, its effects being generally limited to an enlargement of the papillæ filiformes, which gives to the surface a finely roughened aspect). As smoking, however, is not an unfrequent cause of stomach affections, our observations on this head are always attended with certain grounds of fallacy.—*Fox on Diseases of Stomach*.

ing fur, with slight green tinge, is an indication for Copper.

The bright redness of tip and edges, especially of papillæ is an evidence of irritation with determination of blood. It always suggests care in the use of remedies, rest to the stomach, and the special agents named to remove irritation. A good condition of stomach is of first importance in the treatment of disease, and when these symptoms present, these means will hold a prominent place.

The tongue gives us the best evidence of the condition of the blood, and of the remedies which rectify its wrongs. All exudations or secretions from the blood must give information of the character of this fluid, and there is no better place to observe them than in the mouth. The circulation of blood is also very free and superficial in the tongue, and we are thus enabled to observe its changes of color better than in other situations. The reader will recollect the distinction between the tongue itself and the fur or coating, when color is spoken of, as the one is from the circulating blood, and the other from the exudation.

The *broad, pallid* tongue—marked want of color in the tongue itself—evidences the want of the alkaline elements of the body. The evidence is clear and distinct, and the want one of much importance. It may be the basis of the entirety of the disease, which will fade away as soon as the proper alkali is given, or it may be but a portion of the wrong, and the alkaline salt prepares the way and facilitates the action of other remedies.

If there is no special indication for some other, we prescribe Soda because it is the salt of the blood.

Usually we direct the bicarbonate added to water to make a pleasant drink, and given freely as the patient wishes it. If there is predominant wrong of the muscular system, we may select a salt of Potash. If of the cellular tissue, a salt of Lime.

The *deep red* tongue, (usually contracted and dry), evidences the want of an acid, as well as that condition of the blood known as "typhoid." Here, as in the preceding case, the want of an acid (undue alkalinity of blood), may be the principal element of disease, and all the symptoms are ameliorated, and the patient convalesces when it is given. In other cases it is but a portion of the disease, and the acid facilitates the action of other remedies. It is a very common symptom in typhoid and typhus fevers, and the use of an acid in these cases has been found a very successful treatment by Chambers, Anstie and others in the London Hospitals. Our Prof. King, some twenty-five years since, suggested the use of good sharp cider in these cases, and it has been employed with much success: He did not say there was deep redness of mucous membranes, but he might have said so, for he did name the dry and contracted tongue with dark sordes, and they are associated together.

In this case we select with reference to the condition of the stomach, and the blood poisoning, and sometimes we may defer to the taste of the patient. Muriatic Acid usually receives the preference, as it is well borne by the stomach, is a natural acid, and is a powerful antiseptic. It is added to water to make a pleasant acid drink, and given *ad libitum*. In some cases sharp cider is better borne by the stomach, is grateful to the taste, and the small amount of alcohol in it is beneficial.

In others lactic acid, in the form of whey, answers an excellent purpose, as it furnishes a calorifacient food as well.

The deep red, or deep violet-colored mucous membranes, with fullness, evidences sepsis, and is an indication for the special remedy, Baptisia. The acid should also be given in some cases.

The full color, with *violet* shade, superficial and transparent, is the indication for Nitric Acid, and it will be found one of the most valuable remedies of the *Materia Medica*.

The tongue large, thick in centre, with incurved edges, and of a dull blue, or leaden color, is one of the strongest indications for Arsenic, and it will rarely fail to arrest the progress of disease in such cases.

The same dull, leaden color, with no change in size or shape of the tongue, is one of the best indications for the use of Phosphorus, or the Hypophosphites.

The *slick*, raw-beef tongue, the papillæ wholly effaced, evidences sepsis of the blood, and is one of the most marked of the "typhoid" symptoms. The color of the tongue is usually deep, and we will employ an Acid or Baptisia.

The exudation or fur upon the tongue is a pretty good index of the condition of the blood. Of course we must weigh the influence of local disease of the mouth and teeth, and the sympathetic relations with the stomach and bowels, as heretofore named. (See note.)

The *dirty* fur is an indication of sepsis of the blood, as well as of depravation of the secretions. It is frequently associated with moisture, and the redness is rarely increased. We use the common word "dirty,"

because it expresses our meaning clearly—the impression upon the senses is that of dirt, and its meaning is dirt. It may be a dirty-white, a dirty-gray, a dirty-yellow, or a dirty-brown, but the dirty, grimy appearance always assumes prominence in the mind.

If we have a dirty tongue, pallid, we usually think of Sulphite of Soda. If the redness is natural, we may use Sulphurous Acid or Sulphite of Magnesia. If dirty, with increased redness, Muriatic Acid.

All shades of brown and black have reference to the condition known as typhoid. We have every shade of color from the slight tinge of brown to the deep brown or almost black. It is not only the coating of the tongue that shows this color, but accumulations of sordes about the teeth, and sometimes crusts upon the lips. As is the deepness of color, so is the wrong known as "sepsis," and so is the need of the class of remedies known as "antiseptic." As is the deepness of color, so is the impairment of life, and the need of care and rest to conserve it, and of food and restoratives to support it.

These dark coatings are so usually associated with deep redness, that we usually think of acid remedies, first of which is Muriatic Acid. But some of the cases will need Baptisia, others Chlorate of Potash, and some will be benefited by Carbolic Acid. Cleanliness is of especial importance in these cases, as all decomposing animal matter in the air or surroundings, increases the wrong of the blood.

The reader may not have thought that the tongue could tell him much with regard to the condition of the nervous system, and yet a little study will show that it does give very important evidence. It has

special reference to the condition of the sympathetic nervous system, and this may be regarded as the most important, but we also learn much of cerebro-spinal innervation.

We associate *dryness* of tongue with excitation of the nerve centres, especially the ganglionic. So positive is the evidence that it is not possible to mistake it. Dryness of tongue is associated with vascular excitement, and with arrest of secretion from this cause. If in acute disease with dryness of tongue, we find it becoming moist, we know that the nerve centres are being relieved, and that the circulation is improved, and secretion is commencing. If in a case of disease marked by enfeebled innervation from the sympathetic, and moist, relaxed tongue, the tongue commences to dry and becomes firmer, we know that this nervous system has been stimulated, and many times it is a first evidence of amendment.

Whilst dryness always evidences undue excitement of the nerve centres, and calls for sedatives, or that class of agents which remove this, too much moisture and relaxation is evidence of the opposite condition. The reader will recollect the typical salivation from Mercury, and its influence in this regard, and will weigh the depressant influence of the mineral upon the sympathetic nervous system, by these conditions. If after mercurial salivation, the nerve centres are stimulated by Quinine, or Quinine and Opium with Ipecac, the tongue will become firmer and may become dry, and if not too great, this has been regarded as a good symptom. Moisture of tongue is one of the prominent conditions assuring us of the kindly action of Quinine, and even of Opium when indicated. If marked, and accompanied

by full, relaxed tissues, the patient always requires nerve stimulants.

Contraction is always an evidence of an excited nervous system. Sometimes, indeed, we may measure the wrong of innervation by this symptom, as in typhoid and typhus fevers, and in the later stages of acute disease. The reader who has seen the great nervous wrongs of those affections, will recollect the pinched, contracted tongue as one of the prominent symptoms.

Fullness of tongue has the opposite meaning. If marked, we are quite sure that innervation is impaired from atony, or want of normal stimulus of the nerve centres, especially of the sympathetic. It suggests nerve stimulants as a part of the treatment, Podophyllin and Lobelia for the solar and cardiac plexus, Nux Vomica, Strychnia, Belladonna, Ergot, for the associate sympathetic and spinal nervous systems, and Quinine for the associate wrong of the three, or simply for the brain alone.

Whilst the elongated and pointed tongue has especial reference to the stomach and intestinal canal, it is one of the expressions of disease of the base of the brain. It is well to note this fact, for we may have the wrong of the brain as the primary lesion, the nausea and vomiting being but the result, and if treatment was wholly directed to the stomach, we would make a great mistake. Gelseminum assumes a prominent place here, associated either with Veratrum or Aconite. Rest is obtained by the topical action of Chloroform about the ear.

The small tongue, full in the centre, which is covered with a thick, tenacious mucoid coat, is an indication of marked disturbance of the brain, unless we have evi-

dence of acute disease of ears, the globes of the eyes, or the sphenoidal or ethmoidal cells. It may indicate a very grave lesion, or in the latter case will pass away with the local disease. In those cases where the coating is removed, the surface is left slick, and very dark colored.

The tongue covered with a grayish or yellowish fur, showing small patches of red distributed uniformly over the surface, is the tongue of scarlet fever. The same appearance will be seen in other cases, where the capillary circulation of the skin is enfeebled.

The eroded appearance of the papillæ at the tip of the tongue, looking like small, rose-colored bubbles, evidences a peculiar wrong of the nerve centres and of the blood, for which *Rhus Toxicodendron* is the remedy.

The movements of the tongue are sometimes of importance in determining the condition of the brain. If the patient has complete command over it, we conclude that the functions of the brain are still well performed. But if it is protruded with difficulty, is tremulous, or is inclined constantly to one side, we are confident we have a proportionate cerebral lesion. Whilst we might get the evidence elsewhere, it is quite as well to give weight to these symptoms, and when observed, to adopt means early for the relief of the brain.

From what has been said, the reader will draw the conclusion that impairment of nutrition and secretion will be indicated by marked dryness and contraction on the one hand; or increased moisture and relaxation on the other. In the first case there is undue excitation, and if we select remedies to increase secretion or excretion, they will be of a sedative character. In the

other case there is a want of innervation, and the remedies will be those which will give stimulus and tone.

There is a sodden, unpleasant looking tongue, which is quite as good evidence of cacoplastic material in the blood as any we can find. We recognize at once the evidence of enfeeblement of the digestive functions, and if there is local irritation we expect that the exudate will be of this character, readily breaking down and destroying the tissues.

EXAMINATION OF THE DISCHARGES.

The examination of the discharges in common diseases is usually quite superficial, and whilst it has some diagnostic value is usually of little importance. The physician from force of habit asks after the discharge of urine and feces. Has the patient passed urine? freely? was it high colored, or what was its color? Has the patient's bowels been moved? how often? These are the common questions, and the answers are very uncertain and indefinite. Possibly the physician wishes to examine "the vessel," but in these days he is usually satisfied with these casual inquiries, and prefers to get his information from pleasanter sources. In the olden time examination of "the vessel" was of greater importance, for the principal part of the physician's business was to fill it—medicine meant discharges.

It may be well to give this subject a brief study, though we do not attach such great importance to it. We may divide the study into five parts—*a*, with reference to the discharge from nose and mouth; *b*, with

reference to the discharges from the skin ; *c*, with reference to the discharges from the urinary apparatus ; *d*, with reference to the discharges from the bowels ; and *e*, with reference to the discharges from the reproductive organs.

FROM THE NOSE.—The discharges from the nose are of local significance, and indicate changes of function and structure in these cavities. In measles and typhus, catarrhal symptoms are among the most prominent, and in the first are almost pathognomonic ; but these and epidemic influenza are the only instances where the disease is referred to the blood.

The thin, glairy secretion is evidence of irritation and determination of blood. The white of egg looking mucus of active inflammation. The yellowish, glairy discharge of commencing suppuration—muco-pus, and the opaque, yellowish, non-tenacious secretion, of the subsidence of inflammatory action.

Dryness of the anterior nares is usually referred to scanty or arrested lachrymal secretion ; too much moisture of the anterior nares, thin, watery, to increased lachrymal secretion.

In chronic disease of the nasal cavities, the condition of the parts is pretty clearly shown by the character of the discharges which have the entire range of mucus, muco-pus and pus. In determining the diagnostic value of these discharges, we will be guided by the same rules as in other situations. We wish to know the physical properties of normal mucus, and of normal pus, and we will then have a standard of comparison ; this we will study in discharges from the respiratory tract below.

FROM THE MOUTH.—The discharges from the mouth proper are of saliva with some mucus secretion. But through the mouth we have all the discharges from the respiratory tract below, of mucus, pus, blood, exudative material, etc. We also have occasionally discharges from the digestive tract, the stomach, upper small intestine, and secretion from the liver.

The *saliva* normally is a thin, transparent, slightly viscid fluid, with a marked alkaline reaction to litmus paper. If it loses these properties in degree, or is increased, we will conclude that the first act of digestion is improperly performed. Physicians have not been properly impressed with the importance of buccal digestion, and frequently direct their remedies to the stomach when it is not at fault.

We have already seen that *dryness* of the mouth evidenced arrest of secretion, and necessarily impairment of the digestive process. If the salivary secretion is found to be scanty, we anticipate a wrong of digestion, especially of starchy foods, and a wrong of nutrition. It is usually associated with excitation of the nerve centres, and local disease presents unusual irritation. We have the same results where the saliva is constantly thrown off in chewing and smoking.

The remedies suggested in chronic disease by scanty secretion of saliva are, *Iris Versicolor*, *Phytolacca*, *Panax*, and some others of this class, with the Iodides and Bromides, especially of Ammonium.

Increased secretion of saliva is found as a symptom in some forms of chronic disease, and occasionally in acute disease. If marked, it interferes with digestion, and is a cause of depravation of the blood. This may seem singular to the reader, and yet I think any one

who has closely observed cases presenting this symptom will bear me out. The tendency is always to low-grades of albuminoid deposits—cacoplastic, or aplastic.

In acute disease the remedies will be the Alkaline Sulphites or Sulphurous Acid, or sometimes Chlorate of Potash, or Chloride of Sodium. Quinine and Nux Vomica are thought of for the wrong of innervation, and Hydrastis and Podophyllin for the wrongs of the intestinal canal. The same remedies will be applicable in chronic disease, and in addition we may think of Phosphorus, Sulphur, and sometimes Arsenic.

It is hardly worth while to speak of changes in the character of saliva as regards its viscosity, as it is always associated with excess in quantity, and the indications for remedies will be as above. I would call attention, however, to the need of antiseptics in these cases, for very surely we will have sepsis as a prominent feature in the progress of acute disease. If the proper antiseptic is selected, as elsewhere described, whether Sulphite of Soda, Sulphurous Acid, Chlorate of Potash, Baptisia, or Muriatic Acid, this symptom will pass away.

The reaction of the secretions of the mouth to test paper will be found to vary, and this will sometimes indicate the class of remedies to be selected. The alkalinity may be markedly increased, and acids will be associated with remedies to influence the digestive process. In such a case, with dyspepsia, Muriatic or Lactic Acid, largely diluted, with the addition of a small portion of Nux, will cure when the ordinary means have failed. In infantile dyspepsia, we sometimes find the saliva neutral, or in rare cases the entire secretions of the mouth are slightly acid. We find the same conditions in the adult, though not so often nor so marked.

In such cases we would give Phosphate of Soda, and surely expect the patient to amend rapidly.

FROM THE STOMACH.—Ejections from the stomach as the result of disease may sometimes give valuable information, though usually we depend more upon what the patient tells us than upon what we see. But as a matter of interest we may examine the discharges.

Eructations in dyspepsia are very acid or feebly acid. The first is very common and is usually met by an alkali or Bismuth, though experience shows that this is not good treatment, or at least but a part of good treatment. It is associated with hyperæsthesia, demanding Aconite, Hydrocyanic Acid, Rhubarb, Ipecac, and like remedies; with externally the wet pack, either of water or water with an acid. The second evidences a condition of atony, and suggests Muriatic and Lactic Acids, with Hydrastis and similar bitters, Podophyllin, etc.

Eructations containing a yellowish, or yellowish-brown coloring material, and of a bitter taste, shows irritation of the upper small intestine, and sometimes an irritation of the entire chylopoietic apparatus. The remedies will be such as prove sedative to these parts.

Blood in the discharges has a variable significance. If in small quantities, during violent vomiting, we may conclude that some minute vessels have given away; if dark colored and clotted, we conclude there is passive hemorrhage—usually from congestion, except in the rare case of ulceration, with erosion of some of the vessels, when the discharge may either be of bright or clotted blood.

Vomiting of considerable quantities of mucus is occasionally noticed in persistent atonic dyspepsia, and its

therapeutic value will be obvious. Vomiting of pus is at once referred to ulceration, the result of chronic inflammation.

The "black vomit" of yellow fever, and some rare cases of congestive, intermittent and remittent fevers, shows the breaking down of the blood, as well as the congestion of the digestive mucous surfaces.

FROM THE RESPIRATORY TRACT.—The discharges from the respiratory tract are of mucus, pus, blood, and the material of exudation. As heretofore remarked, we wish to have a clear idea of the origin and value of these discharges, and senses trained to recognize them when seen. In health the respiratory mucous membrane is continuously lubricated with mucus, but it is not in quantity to be discharged by mouth; even the increase of quantity is evidence of disease.

If mucus is thin, glairy, and very tenacious, we know that it comes from a mucous membrane in a condition of great vascular excitement—inflammation. The more marked these properties, the more active the excitement. We see it in minor degree in catarrhal bronchitis, but most marked in sthenic bronchitis when secretion is first established. The typical remedy is *Veratrum*.

The *opaque* mucus, not so tenacious, is associated with a subsidence of the inflammation and resolution. The quantity may be such as to enfeeble the part or the patient, but other than this it is regarded as a favorable symptom. The reader must not suppose from this that abundant opaque mucous discharges are *essential* to recovery, for they are not, and the patient convalesces better if the discharge is never in excess, and but little

changed in character. The typical remedy is Ipecac. Change of color evidences local structural disease, and disease of the blood, whatever the color may be. Shades of yellow and green show suppuration—the discharge is more or less purulent. Shades of brown, if not from blood in this discharge, show a low grade of inflammation and impairment of the blood. In some of these cases the discharges look like “prune juice,” or still worse, like the washings of spoiled beef.

Globular sputa is characteristic of pneumonia, as the glairy, tenacious mucus is of bronchitis. So marked is this character of the expectoration in inflammation of the parenchyma of the lungs, that it is evidenced, not only in the single portions of mucus expectorated, but when the patient spits in a vessel, they all run together to form a globular mass.

The *cheesy* expectoration, lacking consistence, seeming to be somewhat granular, is usually regarded as tuberculous. Whilst there are exceptions, it is probable that it may usually be regarded as evidencing aplastic or cacoplastic deposits, and a condition favoring tuberculosis, if it is not broken down tubercle.

Masses of dessicated mucus are sometimes expectorated, that are well calculated to deceive. They are in larger and smaller granules, and fully meet the popular idea of tubercular deposit. Yet when we take a portion and soften it with water on a glass, it gives the glairy, tenacious mucus, and not the friable, tubercular matter. These little bodies are evidently from accumulations in mucous follicles, principally in the larynx, which are forced out in the act of coughing.

Pus from mucous membranes, will in appearance take the entire range of this product. It is usually admixed

with mucus, and thus has greater consistence. It is laudable, or bad, thin, thick, bland, ichorous, yellow, green, brown, etc. It evidences local destruction, though it may be but superficial, the relationship between mucus and pus being very intimate. The gradations of pus have the same significance here as elsewhere.

Blood may be discharged from the throat and pharynx, from the stomach, from the larynx, and from the lungs. From the throat and pharynx it is of usual color, is not frothy, and is ejected by an act of the will. Blood from the stomach is of darker color, is sometimes admixed with food and the secretions of the stomach, or is in part clotted. Blood from the larynx is but little frothy, is of usual color, and is in part discharged by an act of will. Blood from the lungs is usually *bright, frothy*, and wells up into the mouth without the consciousness of the patient.

We always want to know whether hemorrhage is active or passive, as the treatment will depend upon this. Very fresh and bright blood would evidence active hemorrhage, whilst deeper colored blood would evidence passive hemorrhage. Yet we will find better evidence in the color and expression of the face and in the pulse. Active hemorrhage calls for Veratrum and Ipecac, whilst passive hemorrhage refers us to Erigeron, Gallic Acid and Ergot.

Mucus streaked with bright blood evidences inflammation, and is seen in sthenic bronchitis. If the blood is less bright it evidences a lower degree of inflammation, or rather impairment of the life of the part, and if it assumes the "prune juice" character, it evidences an unpleasant condition. The blood in the sputa of pneumonia is *rusty*, and may be found perfectly admixed

with the mass of mucus, or forming a central nucleus. If here it becomes brown, or has the "prune juice" character, it evidences a low grade of inflammatory action and impairment of the life.

We occasionally see exudative material. First, as fibrinous exudations from the mucous surfaces, in croup and in croupous bronchitis; second, as broken down tubercular material from the parenchyma of the lungs. The last is sometimes very characteristic, but at others it is so masked by the bronchial secretions and by the breaking down of the structures, that we can hardly recognize it. Call it cheesy, friable, and the fluid differing in character from laudable pus in consistence, color, etc., and the reader will get a fair idea of it.

EXAMINATION OF THE URINE.

The physician in common practice has but little knowledge of the urine—possibly he may not know the physical properties of normal urine. As we have stated so often, this is the first thing that needs be learned. If we can recognize normal urine when we see it, it will be possible to tell its common variations by sight. Yet here we find a serious obstacle in the way—the very great variations of normal urine both in color and in quantity. Yet there is a normal color, and these differences are more in its concentration than in any real change. The quantity may vary very greatly without any marked change in the excretion—water forming its bulk.*

*COMPOSITION OF RENAL EXCRETION.—The renal excretion has naturally an acid reaction, and consists chiefly of *urea*, with some *wric acid*, sundry other animal products of less importance, in-

The majority of physicians attach but little value to the ordinary examination of urine by the sight, which is popularly known as "Uroscopy." Yet whilst we are convinced that there is a broad basis of charlatanry, there is evidently something real that serves as a basis for selecting remedies. Evidently it is worth study, and I think I can point out a method by which the reader can learn all there is to be known.

It is claimed that all disease is represented in change of the urinary secretions, and that these changes can be recognized. Let us admit it, and then to study diagnosis by the urine we will take cases of disease

cluding certain coloring-matters, and saline and gaseous substances, all held in solution by a large quantity of water.

The quantity and composition of the urine vary greatly according to the time of day; the temperature and moisture of the air; the fasting or replete condition of the alimentary canal; and the nature of the food.

Urea and uric acid are both composed of the elements carbon, hydrogen, oxygen, and nitrogen; but the urea is by far the more soluble in water, and greatly exceeds the uric acid in quantity.

An average healthy man excretes by the kidneys about fifty ounces, or twenty-four thousand grains of water a day. In this are dissolved five hundred grains of urea, but not more than ten to twelve grains of uric acid.

The amount of other animal matters, and of saline substances, varies from one-third as much to nearly the same amount as the urea. The saline matters consist chiefly of common salt, phosphates and sulphates of potash, soda, lime and magnesia. The gases are the same as those in the blood—namely, carbonic acid, oxygen, and nitrogen. But the quantity is, proportionally, less than one-third as great; and the carbonic acid is in very large, while the oxygen is in very small, amount.

The average specific gravity does not differ very widely from that of blood-serum, being 1.020.—*Huzley*.

where the diagnosis is well made, and compare the urine with the normal standard of health. Certainly we will now be able to see these differences if they exist. Here is the patient suffering with pneumonia, bronchitis, or tuberculosis. Is there a urine that represents pneumonia, bronchitis, or tuberculosis? Here are patients suffering from well recognized nervous lesions, neuralgia, paralysis, epilepsy, etc. Is there a urine that represents neuralgia, paralysis, epilepsy, etc.? Here are certain well defined lesions of digestion, blood-making, nutrition, and retrograde metamorphosis. Are there urines that represent these lesions of digestion, blood-making, nutrition, and retrograde metamorphosis?

But supposing we do not find that these diseases are represented in the urines, and we can not diagnose the situation of local disease from it, possibly we can diagnose a general condition of disease. At least we will very certainly learn what is to be learned, and we *will* learn something that is valuable.

The ordinary examination is conducted with reference to—*a*, quantity; *b*, specific gravity; *c*, color; *d*, deposits; and *e*, change in its constituents. In every day practice the examination is of necessity superficial, and it is only when symptoms point to lesions of the urinary apparatus, or the disease is so obscure that we resort to every known means, that a critical examination of urine is made.

To determine anything definitely with regard to this secretion, the urine must be passed in a separate vessel, (which should be clean), and the urine of twenty-four hours saved for inspection. All tests of color should be made in clear white glass containers by means of transmitted light, and all deposits should be examined in a similar manner.

QUANTITY.—The normal quantity of urine in the healthy man is about fifty ounces in the twenty-four hours, and this is of a specific gravity of 1.020, containing 1080 grains of solid matter. The urine may measure but thirty ounces, yet the specific gravity being high, 1.030, the secretion will be sufficient for blood depuration. Again, the urine may be passed in normal quantity, or as much as sixty or seventy ounces daily, and yet being of low specific gravity, 1.010, the patient will suffer from uræmia. There is thus such indefiniteness, that even though we know the quantity of urine in twenty-four hours, we can not tell whether depuration is sufficient or not.

It may be remarked further that we do not expect as large secretion from the kidneys in disease, when the body is inactive, as in health when it is active. Scanty urine is characteristic of all forms of disease, and even an accurate measurement of quantity and specific gravity will not tell us so well whether it is sufficient, as other symptoms that might seem to the casual observer to be more indefinite.

SPECIFIC GRAVITY.—The specific gravity is determined by a urinometer, and having the quantity passed in twenty-four hours, we will, with this instrument, be able to determine the amount of solids in this period. But it does not determine *what* solids. If the urine be of low specific gravity, and in small quantity, the blood may be so freed from urea, that the function may be regarded as normal, for there may be but little of the "500 grains of other animal matter and saline substances" passing out, and the urea for excretion may not be more than two or three hundred grains. Con-

versely, if the urine be of high specific gravity, and passed in considerable quantities, the patient may still suffer from uræmic poisoning, for the adventitious solids, sugar, albumen, saline matters, etc., take the place of urea.

It is well to get an idea of the uncertainty of this examination, otherwise we might be led into error. We reach no conclusions from these examinations that are not proven by other symptoms; and usually we make these examinations to confirm conclusions reached by more definite expressions of disease. If the patient is suffering from the nervous excitation or coma of retained urinary excretion, the examination determining *scanty* urine becomes of value. If the patient shows evidence of waste, and we find too free excretion, we conclude that this drain upon the blood should be stopped.

In any wrong of innervation, we think of the urinary excretion as a possible source of disease, and if we do not find the cause elsewhere, we give the urine a critical examination. In any disease of debility, especially when chronic, if we can not find the cause elsewhere, we turn at once to the kidneys as a possible seat of the trouble, and make the necessary examination.

COLOR.*—The color of the urine has been regarded as the best diagnostic evidence in the common exami-

*Urohæmatin, the substance which gives to healthy urine its peculiar tint, is of more importance to the Clinical Physician than the majority of urinary ingredients; for the quantity passed in the twenty-four hours is not only an index to the tear and wear of the tissues, but the best measure we at present possess of the rapidity with which man burns life's lamp. The amount

nation of this fluid. Of necessity, if any definite information is to be had, the urine must be passed apart from the fæces, and as before named, it should be examined in white glass by transmitted light.

The physician in ordinary, recognizes the normal color varying from a pale straw to a yellowish brown tint, and he classes the urine of disease as dark and light or pale. Scanty and high colored urine is associated with acute febrile and inflammatory diseases, and pale urine with diseases of relaxation. Possibly this is quite as definite as the ordinary professional thought, and we may well ask ourselves if there is any reason for this indefiniteness. Most assuredly there is; and we find it in the wide range of coloration in health, and also in diseases in which color has but little meaning.†

of all the ingredients of the urine we have hitherto considered, are much more under the influence of the diet than that of uro-hæmatin, the quantity of which may be said to be a tolerably exact measure of the destruction of blood corpuscles.—*Harley*.

†The color of the urine varies greatly in disease. It may be perfectly white, yellow, brown, red, black, green, or blue, and each of these tints, in the absence of ingesta capable of accidentally producing them, invariably indicates the existence of grave disease.

Normally colored urine does not, however, exclude the possibility of disease, for the color of the freshly passed urine is no absolute criterion either of the quantity or the kind of coloring matter it contains. The abnormal like the normal pigments are often combined with some of the other urinary ingredients in the form of colorless compounds, and it is not until the compound is decomposed, and the pigment set free, that we can take cognizance either of its quantity or its quality. For example, here are three urines: 1st. A pale, almost colorless urine from a healthy

Let us take the opinion of Dr. George Harley, (and I give it in extenso in the foot note,) a most excellent observer, that the coloring matter of the urine—uro-

infant, aged 18 months. It has a specific gravity of 1.018. 2d. An equally pale, almost colorless urine from a girl, aged 19, suffering from chlorosis. It has also a specific gravity of 1.018. 3d. A dark straw-colored, but perfectly transparent urine from a healthy man, aged 33. It has likewise a specific gravity of 1.018. In fact, these three urines have been purposely selected on account of their having the same specific gravity. To each of these add a quarter of their bulk of strong nitric acid, and bring them to the boiling-point. Watch the change. The infant's pale urine is scarcely altered; the man's dark urine is only slightly deepened in tint; whereas the almost colorless urine of the chlorotic girl has assumed an intensely red hue. What is the cause of this difference? The infant is in the bloom of health—there is no waste of blood-corpuscles in it—all the blood discs it possesses are employed in the development of its frame. The man has arrived at maturity; he is still in the prime of life, and in the enjoyment of perfect health; his blood-corpuscles are not wasted, but merely consumed in the tear and wear of every-day life. The young woman, on the other hand, is suffering from chlorosis; she has a pale lip, and a blanched cheek; her corpuscles are being too rapidly consumed; her life's blood is oozing away by the kidneys, and there it appears as an excess of urohæmatin in her urine.

Take again these two urines so different in appearance. They are from young men about the same age (24 years). The one urine is perfectly colorless, like water; the other is of a deep red color—case of hæmaturia from disease of the kidney. On adding strong hydrochloric acid to the colorless urine it rapidly assumes a port wine tint, whereas the same amount of acid added to the red urine, instead of heightening, actually destroys the color it already possesses. And why? Simply because the pale urine contains an excess of combined urohæmatin, which is liberated by the acid; whereas, the red urine contains merely a number of free blood-corpuscles, which become coagulated, and, as the

hæmatin—represents the wear and tear of the tissues, and especially of the red corpuscles. We might expect this to show us definitely the extent of this wear and

coloring matter in them is insignificant in quantity when compared with the amount of urohæmatin in the other, no sooner are their cell-walls destroyed and the contained hæmato-globulin set free and coagulated, than the red color disappears. Now which of these two classes of urine denotes the most danger? Most assuredly not that containing the free blood-cells. A very small quantity of blood will sometimes color a great deal of urine; whereas an immense destruction of blood-corpuscles may take place in the body, and their *debris* be so eliminated as to be invisible to the eye until the application of an acid sets it free. In fact, experience has shown me that the normally colored urine of disease is a most treacherous guide to go by. It often lulls the inexperienced into the belief that there is nothing materially wrong, when a grave lesion is making rapid strides toward a fatal termination. Not very long ago I was told by an intelligent practitioner that a young lady, regarding whose health we were consulting, was laboring under hysteria. "The secretions," as he termed them, being "all right," my opinion had been asked more with the view of satisfying the friends who were getting fidgety than anything else. The case appeared to be what he said, until he added, "She is well fed, and yet she loses flesh, and I don't know why." This remark at once brought us back to the urine, which he assured me was perfectly natural in color, and contained neither sugar nor albumen. I analyzed some, and the case proved the very counterpart of the lad's just spoken of. Although the girl's urine was natural in color, her life's blood was imperceptibly oozing away with it. This is no solitary example: I might cite many cases of so-called hysteria, which were in reality cases of serious, though obscure disease; but that is surely unnecessary. Who amongst us has not seen patients die, and their disease put down as, only hysteria? The time is, nevertheless, not far distant when we shall learn that hysteria is something more than "mere functional derangement." Hysteria may be a convenient term, but, after all, it is only a cloak of

tear. But it does not; for as the cases given show, the color is not in proportion to the amount of urohæmatin, but in proportion to that uncombined, and to its degree of oxidation.

ample dimensions which hides the rags of ignorance. It is a name instead of an explanation, a sham instead of a reality. And what is still worse, it tends to keep us in ignorance by stifling legitimate inquiry; for no sooner do the majority of practitioners find a name for the disease than they cease to fathom its cause. In some cases of cerebral and spinal disease the excess of urohæmatin in the urine is so great that after it has been set free by an acid and taken up with ether, the ether, after standing, solidifies into a red currant jelly-like mass, and may actually, in some cases, be cut with a knife.

The best way of showing this is to boil four ounces of urine; then add nitric acid to set the coloring matter free. When cool, put the urine into a six-ounce bottle along with an ounce of ether. Cork the bottle, thoroughly shake it, and afterwards place it aside for twenty-four hours. At the end of that time the ether will sometimes be found to be like a red tremulous jelly. Such a case is, of course, a very bad one; but these are not nearly so uncommon as one would imagine. In some of the worst cases of urohæmaturia the urine is neutral or even alkaline, and the *fons et origo mali* is to be looked for in the brain or spinal cord. Indeed, we may often be led to a correct diagnosis of obscure cerebral and spinal disease, by finding urohæmaturia associated with a saccharine or a phosphatic condition of the urine.

In a case of chronic cerebral disease, which I saw with Mr. T. Carr Jackson, the quantity of urohæmatin regularly varied *pari passu* with the severity of the paroxysms, nitric acid turning the urine red, purple, or even bluish (blue matter being after a time deposited on the bottom and sides of the test-tube), according to the severity and duration of the attack. It ought never to be forgotten that alkaline remedies, as well as certain vegetable foods, may increase the urohæmatin. Even the external use of carbolic acid sometimes turns it black.

When urohæmatin exists in a free state, the urine is red in

Notwithstanding this we always associate the high colors or the wrong colors with severe disease. As Dr. Harley remarks, "it may be perfectly white, yellow, brown, red, black, green or blue, and each of these

color before any acid is added. These cases differ from hæmaturia, in the urine being clear and transparent, and devoid of blood-corpuscles, and from intermittent hæmaturia in the absence of congestive casts. If it contains a deposit, the deposit may or may not be high-colored; but in any case the supernatant liquid is clear as well as red. Another fact, which is of great clinical importance is, that the urohæmatin is not always in the same state of oxidation; and, like indigo, its color depends on the amount of oxygen it contains. It may be yellow, red, or brown. In consequence of this, different acids act upon the urine differently. In one case nitric, sulphuric, or hydrochloric acid may produce the same results; in another hydrochloric acid turns the urine red, while nitric acid makes it blue, green, or yellow. In a third sulphuric acid may develop the color better than the others.

To illustrate these remarks: Take the case of a gentleman 33 years of age, whose urine to the eye appeared perfectly normal in color. On adding strong nitric acid, however, to this urine it immediately became of a blood-red hue, whereas hydrochloric acid had no effect upon it until some minutes had elapsed, when it gradually caused it to assume the same tint as that produced by the nitric acid. When sulphuric acid is slowly added so as to fall to the bottom of the test-tube, a reddish-brown line appears at the point of contact, and this gradually deepens until, in the course of six hours or so, it assumes a more intense color than that produced by either of the other acids.

This is an important case in another point of view, namely, as proving the value of urinary analysis in cases of obscure disease. The only symptoms that this patient labors under are those of an irregular kind of dyspepsia, with an occasional pain in the epigastrium. He is in easy circumstances, takes plenty of nourishing food, wants for nothing, yet he gradually gets weaker and weaker, and has lost 17 lbs. in the course of the last year. Even

tints, in the absence of ingesta capable of accidentally producing them, invariably indicates the existence of grave disease." But though we concede the general indication, is there any one who can tell the diagnostic

the locality in which the patient lives is a remarkably healthy one (he was sent to me from Anglesey by Dr. D. Williams, of the Menai Bridge), and if it had not been for the condition of the urine, his symptoms would have remained a mystery. This, too, was one of those cases in which the amount of urohæmatin was so great that it caused the ethereal solution to solidify into a jelly.

An excessive excretion of urohæmatin is not limited to cases such as we have been describing. It occurs to some extent in several diseases, especially those in which there is an excessive tissue metamorphosis, and consequent too rapid blood consumption. Hence we occasionally meet with it in low fevers, in diphtheria, in pneumonia, and some other inflammatory affections, in lesions of the nervous system, during an attack of gout, after the fit of ague, and during convalescence from nearly all grave diseases. It is, however, in chlorosis (either in the male or female), and the many unnamable obscure affections of that class, where it becomes a dangerous symptom. In fact, it always indicates the existence of a past or present mischief meriting the closest attention of the physician, and where we can not remove the cause we must at least attempt to check the effects of the symptom, namely, to restore to the blood as much as possible of the material which is being drained from it. Every one knows the effects of iron upon the system, but iron alone is not always sufficient for our purpose. Something more is wanted, and that is best supplied by the preparations called the syrups of phosphate of iron. Many syrups have been sold under this title. There are the American syrups; the compound syrup of the phosphate of iron, or "chemical food," as it is sometimes named; the syrup of the superphosphate of iron and lime (excellent for children); and a few others. One and all of them are good in particular cases, but they must always be associated with a

value of each or either of these colors, and make it point us to the remedy? This, as the reader will see, is the practical question, and I confess that I can not do it.

In exhaustive disease, in which we may suspect the

judicious selection of regimen in order that the full benefit may be derived from them.

The preparations of zinc, in grain or grain and a half doses, are also occasionally useful astringent tonics when the drain is very great.

In some cases of disease the excretion of urohæmatin by the kidneys appears to be diminished, but this is only when the system has been so drained that there is little more to come away. In the last stage of chlorosis a great diminution in the amount of the urohæmatin in the urine takes place; so also in chronic cases of hæmaturia, notwithstanding that the urine perhaps looks red. Likewise in cases of chylous urine, in the albuminuria of pregnancy, and in chronic Bright's disease. In all these cases the blood has already been well drained of its constituents before a marked diminution in the amount of the eliminated urohæmatin takes place.

Blue and Green Urine.—A great sensation was created some years ago among Clinical Physicians and Pathologists when the first cases of blue and green urine were reported; all doubted, and many disbelieved in their existence. The least uncharitable thought that the patient had hoaxed the doctor. Knowledge has, however, advanced since then. Not one, but many observers have met with the same conditions; and now the doubters and disbelievers in the existence of either blue or green urine are only to be found among the ignorant.

To Dr. Hassall we owe the first good report on the existence of blue urine. It was entitled—"On the Frequent Occurrence of Indigo in Human Urine, and on its Chemical, Physiological and Pathological Relations."

I must here guard you against falling into the common error of supposing that the urine is blue or green at the moment of being voided, for, as far as I am aware, such a condition has

removal of the blood corpuscles by way of the kidneys, the addition of Nitric, Muriatic or Sulphuric Acid to the urine may give us the evidence of this masked hemorrhage through these organs. The directions given in the foot note may be followed.

never yet been observed. In the cases hitherto reported it has only been after exposure to the air, or after the application of chemical agents, that the urine has been observed to become of the colors alluded to. In Hassall's best-marked case, for example, the urine was of a light brown color when voided, somewhat alkaline, and had a specific gravity of 1.017. In the course of three or four days it became thick and turbid, deep brown, greenish, bluish-green, yellowish-green, and finally nearly black; the scum on the surface remaining of a permanent, deep indigo-blue color. All these changes followed upon simple exposure to the air; but, as just said, chemical agents may produce one or more of these changes. Thus, for example, in Munk's case of green urine, when passed the urine was of a dark red color, but on the addition of ammonia it became green. Like everything else when properly understood, these changes have nothing mysterious about them. The body has not created anything new in making blue or green urine. Indeed, as in disease no new functions are ever created, but only a change occurs in the rhythm and force of those already existing, so in disease no new substances are ever created, but only a change takes place in the quantity or in the quality of those normally existing. It is now twelve years since I adopted these views, and the longer and deeper I peer into the wondrous workings of the human frame, the more am I satisfied with them, and the easier do I find the comprehension of disease. Physiology and Pathology are but one study; and although a man may be a Physiologist without being a Physician, no man can be a Physician without being a Physiologist. The same laws that regulate health regulate disease. The very effects we are now studying are a striking illustration of the justice of these observations.

DEPOSITS.*—A deposit from the urine is “always a sign of something wrong,” but, unfortunately, it does not always determine for us the character of the wrong, or the remedy. To obtain a deposit, the urine is passed in a separate vessel, which being covered, is allowed to

*A deposit in the urine is always a sign of something being wrong, and although, as we have seen, it may occur from very trivial causes, whenever it takes place without appreciable cause, in the otherwise apparently healthy, it is a sign not to be disregarded, as, under such circumstances, it is not unfrequently either the forerunner or associate of gravel or stone. Uric acid in some form or other is the commonest ingredient of all calculi, and there is no period of life exempt from them.

Urates are a very common deposit in the course of acute disease, and they even seldom fail to recur at some period or other in the course of chronic affections. It is, however, only in diseases of an acute febrile or inflammatory type that their sudden appearance can be regarded as indicative of a crisis. Their sudden appearance is due to an important change having occurred in the condition of the patient, and in general, though not always, it is a change for the better. Such, for example, is observed to occur in cases of gout and rheumatism where the climax has been reached. So also in pneumonia and pleurisy when resolution and absorption commence.

Should a patient, not laboring under any febrile or inflammatory affection, be every now and then troubled with a pink deposit in the urine without any assignable cause, it will be found, in almost nine cases out of ten, that he is suffering from some chronic affection of the heart, liver, or spleen, with which is associated a tendency to gravel. In all such cases, therefore, steps should immediately be taken to counteract this disposition by the administration of alkaline tonics. Should there, however, be any counter-indication to the direct alkaline treatment, those acid salts are to be employed which, during their passage through the body, are converted into alkaline carbonates—such, for example, as citrates, tartrates, lactates, and acetates. Every now and then

stand from one to twelve hours. It is not well to examine deposits from old urine, urine admixed with fæces, or urine in a chamber utensil that is continuously foul for want of proper washing. Urine undergoes decomposition, and this will give rise to some deposits; fæcal matter will obscure the subject, and a utensil that is allowed to contain decomposing matter will set up processes of change in urine recently passed.

With regard to the value of deposits I can not do better than quote from Golding Bird, as his methods are the clearest I have seen :

“ON THE CLINICAL EXAMINATION OF THE URINE.—The following observations may be of service to the practitioner, as a guide to his proceedings in the superficial examination of the urine, the most important part of which can be readily performed in a few moments in the sick room. Premising that the urine presented for inspection is either an average specimen of that passed in the preceding twenty-four hours, or at least that resulting from the first act of emission after a night's rest, unless the urine secreted at other times of the day be specially required.

“*Urine without any visible deposit, or decanted from the sediment.*—A piece of litmus paper should be immersed in the urine, which, if acid, will change the blue color of the paper to red. Should no change occur, a piece of reddened litmus paper must be dipped in, and if the secretion be alkaline, its blue color will be restored; but if its tint remains unaltered, the urine is neutral.

an exceptional case may arise, where a mineral acid tonic is demanded; under such circumstances the above rule may be departed from, and the case treated according to its special requirements.—*Harley.*

"Some of the urine should then be heated in a polished metallic spoon over a candle, or, what is preferable, in a test-tube over a spirit lamp, and if a white deposit occurs, albumen or an excess of the earthy phosphates is present; the former, if a drop of nitric acid does not redissolve the deposit, the latter, if it does.

"If the urine be very highly colored, and not rendered opaque by boiling, the coloring matters of bile, or purpurine, are present. To determine which, pour a thin layer of urine on the back of a white plate, and allow a few drops of nitric acid to fall in the centre: an immediate and rapidly ending play of colors, from bluish-green to red, will be observed if bile, but no such change will be observed if purpurine alone exists. Should the highly colored urine alter in color or transparency by heat, the presence of blood must be suspected.

"If the addition of nitric acid to deep red urine, unaffected by heat, produces a brown deposit, an excess of uric acid exists. If a specimen of urine be pale, immerse the gravimeter, and if the specific gravity be below 1.012, there is considerable excess of water, but if above 1.025, the presence of sugar, or a superabundance of urea is indicated. To determine the existence of either of these conditions, place a few drops of the urine in a watch-glass, add an equal quantity of nitric acid, and allow the glass to float on some cold water; crystals of nitrate of urea will appear in two or three minutes, if the latter exists in excess. Should this change not occur, the urine must be examined specially for sugar, which, it must be remembered, may exist in small quantities, without raising the specific gravity of

the fluid. For this purpose boil a small portion with an equal bulk of liquor potassæ in a test-tube, and the development of a brown color will at once afford evidence of the almost certain existence of sugar. An excess of coloring matter, rich in carbon, should always be sought after, on account of its pathological importance. This is readily done by boiling some urine in a tube, and, whilst hot, adding a few drops of hydrochloric acid. If an average proportion of the pigment exist, a faint red or lilac color will be produced; but if an excess is present, it will be indicated by the dark red, or even purple tint assumed by the mixture.

"Should the urine be alkaline, add a drop of nitric acid; if a white deposit occurs, albumen is present; if brisk effervescence follows the addition of the acid, the urea has been converted into carbonate of ammonia.

"*Examination of the Sediment Deposited.*—If the deposit is flocculent, easily diffused on agitation, and scanty, not disappearing on the addition of nitric acid, it is chiefly made up of healthy mucus, epithelial debris, or occasionally, in women, of secretions from the vagina, leucorrhœal discharge, etc.

"If the deposit be ropy and apparently viscid, add a drop of nitric acid; if it wholly or partly dissolves, it is composed of phosphates, if but slightly affected, of mucus. If the deposit falls like a creamy layer to the bottom of the vessel, the supernatant urine being coagulable by heat, it consists of pus.

"Urine sometimes appears opaque, from the presence of a light flocculent matter diffused through it, neither presenting the tenacity of mucus, nor the dense opacity of pus. Although scarcely sufficient in quantity to interfere with the perfect fluidity of the urine, if a little

be placed in a test-tube and agitated with an equal bulk of liquor potassæ, the mixture will often become a stiff, transparent jelly. This peculiar appearance is demonstrative of the presence of the exudation, or large organic globules formed under the influence of irritation, providing the urine does not coagulate by heat, for should it do so, the existence of minute quantities of pus may be suspected.

“If the deposit be white, it may consist of urate of ammonia, phosphates, or cystine; the first disappears on heating the urine, the second on the addition of a drop of diluted nitric acid, whilst the third dissolves in ammonia, and the urine generally evolves an aromatic odor like the sweetbrier, less frequently being fetid.

“If the deposit be colored, it may consist of red particles of blood, uric acid, or urate of ammonia, stained with purpurine. If the first, the urine becomes opaque by heat; if the second, the deposit is in visible crystals; if the third, the deposit is amorphous, and dissolves on heating the fluid.

“Oxalate, and more rarely oxalurate (?) of lime are often present diffused through urine, without forming a visible deposit: if this be suspected, a drop of the urine examined microscopically will detect the characteristic crystals.

“If the urine be opaque like milk, allowing by repose a cream-like layer to form on the surface, an emulsion of fat with albumen is probably present. Agitate some of the urine with half its bulk of ether in a test-tube, and after resting a few minutes, a yellow ethereal solution of fat will float on the surface of the urine—a tremulous coagulum of albumen generally forming beneath it.

"Much of the little time required for the investigation thus sketched out, may be saved by remembering the following facts:

"If the deposit be white, and the urine acid, it in the great majority of cases consists of urate of ammonia; but should it not disappear by heat, it is phosphatic.

"If a deposit be of any color inclining to yellow, drab, pink, or red, it is almost sure to be urate of ammonia, unless visibly crystalline, in which case it consists of uric acid.

"The following tables briefly point out the readiest mode for the examination of crystalline deposits, both by chemical tests and by microscopic examination. The latter mode is of course preferable to all others, both for the accuracy and extent of the information it affords, as well as for economy of time:

TABLE FOR DISCOVERING THE NATURE OF URINARY DEPOSITS BY CHEMICAL RE-AGENTS.

1.	{	Deposit white,.....	2	
		colored,.....	5	
2.	{	" dissolves by heat,.....		Urate of ammonia.
		insoluble by heat,.....	3	
3.	{	" soluble in liquor ammoniæ,...		Cystine.
		insoluble in, ".....	4	
4.	{	" soluble in acetic acid,.....		Earthy phosphates.
		insoluble in ".....		Oxalate and oxalurate of lime.
5.	{	" visibly crystalline,.....		Uric acid.
		amorphous,.....	6	
6.	{	" pale, readily soluble by heat,		Urates.
		deeply colored, slowly soluble		
		by heat.....		Urates, stained by purpurine.

TABLE FOR THE MICROSCOPIC EXAMINATION OF URINARY DEPOSITS.

1.	{	Deposit amorphous,.....	2	
		visibly crystalline,.....	3	
2.	{	" vanishes on the addition of		Urate of ammonia.
		liquor potassæ,		
		permanent after the addition		Phosphate of lime.
		of liquor potassæ.....		
3.	{	Crystals in well defined octahedra,.....		Oxalate of lime.
		" not octahedral,.....	4	

1.	{ Crystals in six-sided tables, soluble in ammonia,.....	
	“ not tabular, nor soluble in ammonia,.....	5
5.	{ “ soluble in acetic acid,.....	6
	“ insoluble in acetic acid,.....	8
6.	{ “ in prisms or simple pennæ,...	
	“ radiated or foliaceous.....	7
7.	{ “ soluble in acetic acid with effervescence,.....	
	“ soluble in acetic acid without effervescence.....	
8.	{ “ in dumb-bells or radiated,....	
	“ spherical or colored,.....	
9.	{ “ in lozenges or compound crystals,.....	
	“ in spherical crystals.....	

Cystine.

Neutral triple phosphate.

Carbonate of lime.

Bibasic-triple phosphate.

Oxalurate (?) of lime.

Uric acid.

Urate of soda or ammonia.

EXAMINATION OF THE FÆCES.

THE BOWELS.—Excretion by the bowels does not hold that importance now that it did in olden times. We learn by experiment that of the four to six ounces of fæces, giving one to one and a half ounces of solid residue, but about 100 grains are of excrementitious matter.*

The *liver*, which was formerly thought to play so important a part in removing waste of tissue, and excrementitious matter, yields but a few grains of this (four to eleven grains). It has also been conclusively determined that there are no agents that act upon the liver, increasing its secretion (*cholagogues*); that mercury in any of its forms does not influence it in the least, except when it produces its constitutional effect, and when given to catharsis, it lessens the secretion. All cathartics in cathartic doses diminish the secretion. Even our Podophyllin, which has been regarded as a *Samson*

*See Principles of Medicine, p. 126.

in its influence upon the liver, diminishes the secretion in cathartic doses, and in minute doses lessens the bile solids while it slightly increases the quantity excreted.

If we can learn that the liver performs an important function in digestion and in blood-making, furnishing its secretion for these purposes, and that it is admirably adapted to these purposes, and rarely the subject of disease, and that we have no medicines that influence it directly, to increase secretion, we will have made an important advance in pathology, and will have much improved our therapeutics. We may classify it with the pancreas, and may expect to influence it only by those remedies that control the circulation, act through the sympathetic nervous system, and influence the processes of blood-making.

Our inquiry in regard to the fæces will have reference, first, to the increase or diminution of the secretion; second, to the condition of the intestinal canal, as an apparatus for digestion; and third, to any abnormal constituent, or marked change in the character of the excretion.

Increase of the fæces, in proportion to its extent and duration, causes debility; for histogenetic material, either as food or tissue, is proportionably removed.

Fluid fæces, whilst very frequently in *excess* as above, deserve attention more particularly as evidencing such lesion of the intestinal canal, as interferes with digestion and blood-making; and also with that due degree of distension of the blood vessels, which is necessary to proper circulation.

Deficiency of fæces may depend upon the quality of the food, or upon its quantity; the largest proportion of fæcal material being furnished by the debris of

food; or it may depend upon an arrest of secretion, in which case we will have the same constitutional evidence that we would have in similar arrest from the skin and kidneys; or it may be dependent upon atony of the intestinal canal, which allows the material to accumulate, without the natural effort at removal.

Simple *constipation* gives rise to derangements of digestion, and the retention of effete material in the bowels occasions a feeling of *malaise* and dullness, with headache and fever, in so far as they are retained in the blood, or re-absorbed.

The *color* of the discharges is sometimes of importance in determining the character of disease. The natural color, like the natural fœtor, evidencing a condition of the intestinal canal in which its functions may be properly performed.

The *dark-brown* or almost *black* color of the fœces, observed in typhoid disease, arises from the excretion of the coloring material of the blood; the red globules being broken down rapidly.

The use of iron in any of its forms, and occasionally of sulphur or its salts, will darken the color of the fœces. The *dark-green* color of the fœces that followed the administration of mercury, and was thought to be bile, was due to the formation of *sulphuret* of mercury.

Greenish discharges are generally dependent upon an increase of acid in the intestinal canal, with irritation and consequent indigestion. It may, in part, be dependent upon the coloring matter of bile, which is thrown off by the fœces, in consequence of such irritation.

Clay-colored discharges refer to a general want of secretion; not only of the solitary glands of the intes-

tine, but of the associate viscera. It is an atonic condition, with impaired innervation and circulation.

The natural *odor* of *fæces* seems to be dependent upon a special secretion in the neighborhood of the *cæcum*. It may be regarded as an evidence of normal activity throughout the entire intestinal track.

Diminution of the odor is an indication of want of functional activity, as an increase will indicate increased activity.

Fetor refers to decomposition of the intestinal secretions. It varies greatly from local causes, and can not be relied upon as indicating any special condition of the general system.

The *cadaverous fetor* may, however, be taken as evidencing a septic condition, not only of the intestinal secretions, but also of the fluids and solids.

It is difficult to determine change in the elements of *fæces*, and it will hardly form a part of ordinary examinations. The principal of these I append, Lehman's Chemical Physiology being the authority.

"The excrements in consumption are sometimes found to contain more *fat* than usual. *Sugar* is occasionally found in the *fæces* of diabetic patients. The stools are found to be black, chocolate-colored, or tar-like, when blood is contained in them, and this arises from the upper intestinal canal; so also the semi-liquid, green excrements which are observed occasionally in typhus and other diseases, depend upon blood, which is easily recognized by the microscope. Soluble *albumen* is found in the stools in dysentery, typhus, and occasionally in Bright's disease, and in cholera. The greatest quantity of epithelial cells are found in the dejections of cholera. *Cytoid corpuscles* are very numerous

in the excrements in catarrhal diarrhœas, in dysentery, and occasionally in typhus and cholera. *Hyaline mucus* is observed in the excrements in catarrh of the large intestine; it arises from the follicles of the colon, and contains round or oval pale or granular cells and cell nuclei. *Fibrinous exudations* occur in the fæces in follicular ulceration and in dysentery."

DIAGNOSIS BY THE TOUCH.

In our study of the senses, we found that the tactile sense could be wonderfully developed. Marked examples of this may be found in the mechanic arts, not only of extreme delicacy, but of complex and difficult work accomplished through this sense alone. The education of this sense in the blind is another marked example, and it is well that a physician should make himself acquainted with the education of the blind, to see the range of this sense which in the majority has such imperfect development.

What information can we gain by the sense of touch? Not much, one would say at first thought; yet we find it an important means of diagnosis if we study it carefully, and train the sense of touch. The obstetrician relies wholly upon it, not only determining the presentation and position of the child, but the condition of every part engaged in the process. His touch tells him the condition of the depending portion of the uterus as an outlet, and also the condition of the organ as regards the power of expulsion. It determines the condition of the vagina as a parturient canal, and becomes so sensitive that it recognizes intuitively changes of

condition that will render the labor painful, protracted, or difficult. In diseases of women, many physicians rely upon the sense of touch far more than sight, and very rarely use the speculum. The finger tells the condition of the uterus, not only as regards position, but pathological changes as well. It determines diseases of vagina, bladder, rectum, indeed of all these parts, and does it so well that it becomes our most reliable guide to treatment.

I will guarantee that there is not one medical reader but what could to-day, blindfolded, determine better by simply placing his hand on the patient what kind of a bath should be employed, or whether any at all, than he can with his eyes open and without the touch. Try the touch in cases of intestinal disease, shutting your eyes to shut out ordinary impressions, and you will be astonished at the result. Pass the hand over the abdomen and at once you know whether a diarrhœa is irritative or atonic, and a correct treatment is suggested. You may determine the character of a dyspepsia in the same way, and the general outline of treatment. You can locate the disease and determine its kind. Even in uterine disease the abdominal touch becomes important. Try a case of pneumonia—let the hand rest on the chest, slowly passing it over, and you will be surprised to know how much may be learned—a Winter's practice, and it becomes a means of physical diagnosis.

A most excellent way of making this study is to take a note-book and enter every question that may suggest itself with reference to the various sensations given to touch. Then question our experience—when and where have I met each of these? what has been the nature,

progress, duration, and termination of the disease. Now with what we know we will carry on a series of experiments in every case of disease, making use of what we have for the benefit of the patient, and learning what we can for the advantage of others in the future.

Let me put a few questions which will serve as an example. If I put my finger on the tongue, and find it dry, contracted, or rough, would you give Podo-phyllin? an emetic? Quinia? Opium? or a stimulant? If I put my hand on the abdomen and find the walls tense and contracted, the patient having diarrhœa, what will be the remedy? If relaxed and tumid what? If in uterine disease the abdominal wall is tense and contracted, what is the nature of the disease? If all the tissues are soft, full, doughy, what? If the hand placed upon the forehead gets the sense of relaxation and moisture, what would be the character of a headache? If the forehead was tense and dry, what? I offer these as examples of questions that one may ask himself, and as the reader will see they can be greatly varied, and asked of every part of the body, as well as of the body as a whole. Ask then with reference to the conditions of disease, but especially with reference to remedies, as the diagnosis that suggests treatment is that which we want especially.

In a case of labor, if the examination shows constriction with want of secretion—*pinched* expresses the condition of the parts, both of the lower segment of the uterus, vagina, and perineal tissues—we know we will have a protracted and difficult labor. If the hand is placed upon the abdomen over the uterine globe and we get the same sensation of unnatural contraction—

pinched—there is possibly rigidity of os, or perineum ; what is the remedy ? You answer Lobelia, because it is the common remedy for rigid os and perineum. But you give it without any advantage, and it sometimes causes a very unpleasant irritation of the stomach and nervous system, and makes things worse rather than better. Let us ask your hand in place of your head. If this was a headache, and you had a similar sensation when your hand was placed on the patient's forehead, what would you give ? You answer promptly, Gelseminum ; good, then give Gelseminum and not Lobelia. If upon examining muscular tissues you had the same unpleasant sensation of contraction and irritability with pains what would you give ? Aconite or Veratrum with Macrotys—good, give Aconite and Macrotys in this case. If in chronic disease of the pelvic viscera we obtained the same sensation as the hand rested upon the lower abdomen, what would we give ? Gelseminum, Aconite, Macrotys.

If in this examination during tedious labor, we found the tissues thick and doughy, with rigid os and rigid everything else, what would we give ? With this condition shown by an internal examination, the hand placed upon the abdomen would receive the same sensation of unnatural fullness and want of action. Here we would give Lobelia. The touch tells the story clearly and explicitly, and names the remedy, which we find upon trial acts "specifically." Supposing now it should be pneumonia or bronchitis, and the hand placed upon the chest gets the same sensation of unnatural fullness, would the remedy be Lobelia ? Or if the finger placed upon the tongue obtains the sensation of doughy fullness, or the eye obtains it, would the remedy

be Lobelia? Most assuredly, unless something else acting in the same way is more prominently indicated by other symptoms.

In speaking of the touch as a means of diagnosis, we must not omit to notice the lesions of nutrition and excretion—supply and waste. How do you determine impaired nutrition? Surely not by the fullness or leanness of the face? if you do you are frequently mistaken. You want to know if the loss of size and weight is from want of fat or muscle, and your hand at once seeks the covering of the false ribs for the one, and grasps a group of muscles—say of the arm, for the other. It would be absurd to feed a patient with beef tea or other histogenetic material if we wanted fat, though we might give calorifacient food to save tissue.

We not only get the evidence of impaired nutrition by the touch, and the food designated, but it tells us of medicines that will prove curative. If the sensation be of want of tone—tissues loose and flaccid—we think of Bitter Tonics, Quinine, the Hypophosphites, and Iron. If the sensation be of structures pinched and stringy, we look for lesions of the nerve centres, and think of Macrotys, Muratic and Lactic Acids, Phosphoric Acid, fatty inunction, etc.

The sensation of fullness without elasticity, would suggest old tissues, and the necessity of active waste, and would suggest Acetate of Potash, Iodide of Potassium, and stimulant cathartics and diaphoretics. If digestion remained good, these might be sufficient, for the tissues would be renewed as fast as broken down. But if their use gave soft and flaccid tissue, we should supplement them by such a restorative as the triple

phosphate of Quinia, Strychnine and Iron — "Compound Tonic Mixture."

We would never give Iodide of Potassium in secondary syphilis, where the tissues give the pinched and stringy sensation to the touch. Such a case would ask for Veratrum, Cod Oil, Iodide of Ammonium, and some would say Arsenic. Let one of those cases of secondary syphilis, characterized by full, inelastic, lifeless tissues fall into the hands of the routinist who prescribes Protiodide of Mercury in all cases, and he loses appetite, digestion and blood-making, and grows worse rapidly.

This is but an imperfect and partial sketch of one of our means of diagnosis, and one that has been regarded as least useful. Yet it points out the method of rational diagnosis, and the one we purpose studying in considerable detail. As the reader thinks of the subject, and recalls and arranges his experience, he will be surprised how much he knows practically, and still more surprised as he puts it in practice intelligently, how it aids him in the selection of remedies.

THE PULSE.

Among the most important of the functions of life is a normal circulation of blood, indeed it seems to serve as a basis for the performance of all other functions. Healthy life is dependent upon a regular and uniform circulation of blood, and disease must follow any considerable or continued variation in this function.*

*If the finger be placed upon an artery, such as that at the wrist, what is termed the *pulse* will be felt; that is to say, the elastic artery dilates somewhat, at regular intervals, which an-

Whilst the heart is the centre and principal source of power of the circulation, every vessel does its part in aid of the movement of the blood. We have, therefore, to determine by the pulse the condition of the heart, the condition of the arteries, the condition of the capillaries, and to some extent the condition of the veins. As these movements are stimulated and co-ordinated by the sympathetic nervous system, it should also tell us of wrongs of innervation. As the movement of the blood depends, to a certain extent, upon its organization and condition, it may also determine for us something of the wrongs of this fluid.

We will probably study the pulse to better advantage if we analyze it, and think of its elements separately. Put your finger on the radial artery and carefully observe the movement. It first divides itself into : (a) a

answer to the beatings of the heart. The pulse which is felt by the finger, however, does not correspond precisely with the beat of the heart, but takes place a little after it, and the interval is longer the greater the distance of the artery from the heart. The beat of the artery on the inner side of the ankle, for example, is a little later than the beat of the artery in the temple.

The reason of this is that the sense of touch by finger is only delicate enough to distinguish the dilatation of the artery by the wave of blood, which is driven along it by the elastic reaction of the aorta, and is not competent to perceive the first shock caused by the systole. But, if, instead of the fingers, sufficiently delicate levers were made to rest upon any two arteries, it would be found that the pulse really begins at the same time in both, the shock of the systole making itself felt all over the vascular system at once; and that it is only the actual dilatation of the arterial walls, which, traveling in the form of a wave from the larger to the smaller arteries, takes longer to reach and distend the more distant branch.—*Huxley*.

dilatation of the artery, and (b) a succeeding contraction. The wave of blood forced forward by contraction of the ventricles, gives us the arterial dilatation, whilst the contraction of the artery may represent the subsequent filling of the ventricles from the auricles.

To this extent the pulse evidences the time of contraction, or the rapidity of heart-beat. Even to this extent the information is important, for a healthy life can only be maintained when the movement of the blood is well timed. If the heart beats too rapidly, we must have a wrong in the life, as if it beats too slowly we will have a wrong in the life.

With regard to *frequency of pulse* we are in the habit of saying—as is the frequency so is the impairment of all the vegetative functions—of the appetite, digestion, blood-making, nutrition, excretion from skin, kidneys and bowels—wrongs of the blood, the activity of zymotic poisons, etc. There may be exceptions to this general rule, but it is so constant that we find it important to act upon it in every case of disease. Given, frequency of pulse, the questions at once suggested are—what is its cause? what is the remedy?

Whilst frequency of pulse suggests to us the use of that class of remedies called sedative (special or arterial sedatives), they will not always answer our purpose. If the wrong be purely one of the circulatory apparatus, functional in its character, and depending upon a wrong of sympathetic innervation, these remedies will probably be sufficient. But if the frequency of pulse represents and is dependent upon some other lesion, as of the blood, or local disease, then other and different remedies may prove the sedatives.

Frequency of pulse is associated with frequent respi-

ration. The proportion is usually five beats of the pulse to one respiration. Thus an adult man in the sitting position will make thirteen to fifteen respirations each minute, and the proportionate pulse will be sixty-five to seventy-five beats per minute. With a pulse of one hundred and ten beats per minute, we will have twenty-two respirations per minute. The relation of frequent respiration to various wrongs of function will be known to the reader, and evidently a slower respiration is something to be desired in all cases of disease, and something that must be obtained in some cases if the patient recovers health.

Without reference to the undue general excitation that comes from frequent respiration, and the exhaustion that must follow this severe muscular work, I would call attention to the marked wrong it must work in diseases of the respiratory apparatus. Rest is an essential to recovery in all diseases of excitation, and in most diseases of structure. With a rapid pulse, we can not have rest of the respiratory apparatus, for the movement of the chest is related to the movement of the blood. Make the pulse go slow, and the movement of the chest is likely to be slow in proportion.

The relation between the frequency of pulse and the temperature will be borne in mind. For each increase of ten beats per minute of pulse, there is an increase of one degree in the temperature. Thus with a normal circulation of seventy beats per minute, and a normal temperature of 98° , we will find an increase of pulse to ninety will give a temperature of 100° ; with an increase of pulse to one hundred and twenty we will have a temperature of 103° , and so on. This rule does not hold good in all cases, possibly not in the majority, for

the high range of temperature, from 103° to 108° , does not carry the pulse up proportionately.

When we come to consider the influence of changes of temperature we find them similar to those that follow change in the time of pulsation. In the ratio of increased temperature we find arrest of excretion, of nutrition, of digestion, of blood-making, and of innervation, and that zymotic poisons propagate themselves more rapidly. With the temperature maintained above 103° , death is a matter of time, indeed molecular death is going on from the time the temperature strikes this point.

It was mentioned that local processes of disease are severe in proportion to the frequency of the pulse. This will be noticed especially in inflammation—as is the frequency of the pulse so is the intensity of the inflammation, the impairment of the life of the part, and the danger of a termination in death. The local hyperæmia is increased by the rapid pulse, and the final arrest of circulation is also promoted by it. If, therefore, we wish to stop the process of inflammation, we select those remedies which will lessen the frequency of the pulse.

If in any case we have a structural lesion, whatever may be its nature—either an impairment of nutrition, or from deposit—we will find, frequently, that its progress will be in proportion to the rapidity of the pulse. In these cases remedies that influence the circulation, giving it normal frequency and freedom, will be very important.

It was also named that zymosis or sepsis was rapid in proportion to the frequency of the pulse. This may be noticed in those diseases known as *typhoid*, in ery-

sipelas, the eruptive fevers, diphtheria, as well as in typhoid and typhus fever. As is the frequency of the pulse, so is the evidence of sepsis, as marked by dirty, brown, or black coatings on the tongue, sordes on the teeth, *pungent* heat, offensive discharges, etc. The danger to life is frequently in proportion to the frequency of the pulse, and means that will give a better circulation as regards time, freedom, and uniformity. in all parts of the body, lessen these unpleasant symptoms.

But frequency is only one of the wrongs of the circulation, and but a part of the information we should obtain from the pulse. Frequency has reference to the rapidity of the blood-waves—the number that passes under our finger in one minute. In addition to this we have to notice that there are peculiarities in the blood-wave, and in the current after this wave has passed. The pulse has volume—referring to the size of the artery. It has varying impulses in the wave of the blood, and also in the interval between the waves.

Volume, or increased size of the artery may have reference to the amount of blood, to its increased circulation, or to some obstruction to its free movement. We will have a large pulse in the plethoric, we may expect a small one in the anæmic, and these conditions will be determined by other evidences. If the artery is large, and the person is not plethoric, we ask the question—is it dependent upon a more rapid movement of the mass of the blood, especially to the surface, or is it dependent upon an obstruction to its movement through the capillaries? Freedom in the pulse-wave indicates the one, and a want of freedom—oppression—indicates the other condition.

The *sharp* impulse of the wave of blood, as it strikes the finger, may be referred to lesions of the nerve centres, especially of the sympathetic. The wrong is of irritation, and calls for remedies that relieve it. If the impulse be sharp, the wave short, and the inter-current vibratile, the irritation is extreme.

The dull, elastic stroke of the wave refers us to an impairment of innervation from the sympathetic and spinal cord. The more marked this is, the greater the necessity for those remedies which stimulate and give strength to these nerve centres.

The length of blood-wave has reference to that condition known as "sthenia," an excitation founded on strong life. This is especially the case where the wave is large in volume, and well supported by the column of blood behind.

The *oppressed* pulse is marked by a want of power in the stroke, and more especially by a feeling as if the current in advance of the wave broke its force. Evidently the blood-wave does not measure the amount of blood passing through the artery. It refers us to obstruction in the capillary vessels, or possibly an impairment of the large vessels as well, or a wrong in the blood unfitting it for circulation.

If the finger be carefully trained it will notice a variation in the surface of the wave, as well as in its length. Many times it is distinctly felt as two waves—a first sudden and short, and a second full, even and prolonged. The first may be called the *shock-wave*, and the second the systolic-wave which represents the movement of blood from the heart.

The *shock-wave* sharp and pronounced may always be referred to undue excitation of the nerves distributed

upon the vessels, and an undue contraction or tension of their walls.

The full, strong, systolic-wave may be referred to excitation of the heart and strength in its movement.

The short, systolic-wave evidences a want of cardiac power, and especially of impaired innervation from the spinal cord and sympathetic.

The inter-wave current sometimes gives valuable information, and it is well for the reader to observe it carefully in health and learn its normal condition. We find in disease that it has more or less volume, has more or less strength, and has more or less of the vibratile quality.

When we speak of a *full* pulse, we have reference to the inter-wave current as well as to the wave, and the condition of *sthenia* will be determined by this. It is strong life in a state of excitation.

If now we add *hardness*, we have added an especial lesion of innervation, of excitation steadily maintained.

If we speak of a *small* pulse *hard*, we refer it to impairment of life from activity, still maintained.

If we have a *small* pulse *soft* and easily compressed, we refer it to deficient innervation.

If we have a *small* pulse *vibratile*, we say it is the expression of impaired life, with great excitation of the nerve centres.

If we have an *empty* pulse, the inter-wave current hardly perceptible, it is the evidence of impaired life, with enfeebled innervation from the sympathetic.

There are other changes of the pulse which might be noticed, but they are difficult to describe and learn. I do not think that we can tell every lesion by it, as Chinese doctors believe, but to the educated touch it

gives most valuable information with regard to the most important functions of life. I doubt not many physicians can locate lesions with very great certainty from it alone; that they can distinguish lesions of the brain, lungs, digestive apparatus, urinary apparatus, etc., and determine, to some extent, their character.

But in the practice of medicine, there is something of more importance than locating a disease, or even determining the character of the lesion. The important object is to associate the evidences of disease with remedies for their cure, and to make the expressions of disease point to the medicine.

Feeling the pulse gives us a knowledge of the lesions of the circulation—most important information in the majority of diseases. Every lesion of the circulation is distinctly announced to the cultivated touch, as is some lesions of the blood and of the nervous system. In so far as we study the pulse, I desire that it shall mean special remedies—not names of disease.

Frequency calls attention to a wrong of the circulation and prompts the asking of the question—why? It does not necessarily mean *Veratrum*, *Aconite*, *Gelsemium*, etc., though it is suggestive of them. Why? Is the wrong in the vessels an obstruction to the free circulation of blood, requiring an increased movement of the heart to compensate it? Is the wrong an enfeeblement of the heart, requiring increased frequency of impulse to compensate for want of power? Is the increased frequency dependent upon irritation of the cardiac plexus? Is the frequency dependent upon a wrong of the blood? Upon a cerebro-spinal wrong?

The *full* pulse with *strength* means medicine—*Veratrum*. Whether full and hard, full and bounding, the

special sedative named is at once suggested. It may not be all that the patient wants, but it is one, and in many cases will stand first.

The *full pulse doughy* (lacks the marked vibration) means Lobelia; or if marked and associated with fullness of mucous membranes and purplish discoloration, Baptisia; or if accompanied with muscular pain, Apocynum.

The *full pulse open*, is kindly influenced by Podophyllin, and especially by Quinine in full doses.

The *large pulse empty* calls for the alkaline sulphites, Sulphurous Acid, stimulant baths or fatty inunction, Quinine, and histogenetic food. The sensation we get in this case is of an artery of large calibre, but with too little volume of blood—the sensation after the impulse being of emptiness.

The *full pulse vibratile* calls for Gelseminum, usually associated with Veratrum.

The *full pulse oppressed*, calls for Belladonna, alternated with Veratrum; if sepsis, Baptisia.

The *small pulse* usually means Aconite.

The *small pulse vibratile* Aconite and Gelseminum.

The *small pulse oppressed* Belladonna and Aconite.

The *small*, soft, easily compressed pulse, Aconite, stimulants. Small doses of Quinine with Opium and food.

The *small pulse, frequent*, easily compressed, the wave of blood giving a sense of *squareness* as it passes under the finger, Opium.

Want of power in the impulse suggests Digitalis, Capsicum.

The *sharp stroke* of the pulse with *tremulous wave* between strokes, means Rhus.

The *sharp* stroke of pulse, with even, small, vibratile current between strokes—Bryonia.

The *dull* stroke with tremulous or vibratile wave—Phytolacca.

The *open, tremulous* pulse—Arsenicum.

The *small* or *open* pulse in which the wave of blood drops suddenly as it passes the finger—Pulsatilla or Cactus.

Irregularity of pulse, soft or open, with a distinct wrong in the stroke—Cactus.

The steady, vibratile pulse, without marked wave—Macrotys.

We have often reason to believe that Quinine is indicated by the periodicity of the disease, and yet our experience with the remedy raises doubts of whether it will be well received and exert a kindly and curative action. If the pulse is *hard* and *vibratile*, wiry, we will *not* give it; if it is soft and open we may expect its kindly action. The physician who would administer Opium or its salts with a hard, wiry pulse, would be doing his patient a great wrong. Here, also, we want a soft, open pulse for the kindly action of the medicine. No one in his senses would give Podophyllin when there was a small, wiry pulse, or when it had a sharp stroke—the patient might get through safely, and it might kill him.

This is only a partial consideration of the subject, and the results of my own experience. It should agree with what others know of the pulse as a means of diagnosis, and I hope will be thoroughly proven. Even if proven to be without foundation in fact, the investigation will give practical knowledge, and will increase our knowledge of the relationship between the evidences of disease and remedies.

If the reader will notice carefully, he will see a marked resemblance between the touch of the pulse, and the general sense of touch when the hand is applied to the skin. The sensation from the slight œdema of cellular tissue, that indicates Apocynum, and the pulse that says Apocynum is wonderfully similar. The sensation from the skin that says Lobelia and the pulse that says Lobelia is the same. The pulse of Veratrum is associated with the skin of Veratrum. And so we will find it all the way through, if we see the indications for remedies rightly they never conflict.

THE TEMPERATURE.

Among the evidences of disease, none are more definite and important than changes in the temperature. Heat is not only force in the animal body, but it is also a condition of life; a man has activity through it, and he has life by it. The theory of Samuel Thomson—"Heat is life, cold is death," was very simple, and had much of truth in it—it was just one-third of the truth. Cold is death, but so is too high a temperature, and an unequal distribution of heat.

The human body maintains its healthy functions at a temperature varying from 98° to 98.5°. This is a condition *absolute* for health. If the temperature varies from this above or below, disease must result. We may state the proposition in a different form—no disease can exist without changing the temperature of the body, either raising it, depressing it, or rendering it unequal. Thus, change of temperature becomes an absolute evidence of disease, though it may not point out the character or the location of the lesion.

In the olden time changes in the temperature were determined by the hand applied to the surface of the body. With some physicians the touch would be so educated that it would recognize these changes with considerable accuracy. Whilst it would not note the changes within one or two degrees when the temperature was above, it would recognize certain alterations of the skin, and modifications of heat or electricity, that the body thermometer does not take cognizance of. This information is of great importance, and whilst we highly value the body thermometer, we purpose to cultivate the touch as far as possible.

THE BODY THERMOMETER.—The thermometer is presented to us as a new means of diagnosis, but as far back as 1754, one hundred and twenty years ago, Antonius De Haen, the first clinical teacher of medicine at Vienna, insisted upon its use to determine the temperature of the body, rather than to judge by the hand. But though De Haen showed that it was the only correct index of heat, and seemingly indispensable in diagnosis, if it was desirable to determine the temperature, he was not able to convince the profession that this was desirable, and its use lapsed with his death.

The use of the thermometer has been revived within the last fifteen years, and is now exciting much attention, and is employed by many as a most valued means of diagnosis and prognosis. It is valued now, because we appreciate the fact that the vital processes can only be performed in perfection at the normal temperature of 98°, and that just in proportion as it varies from this, either above or below, they are changed or arrested. Indeed, it would seem, that heat, at this degree, was the

most essential condition of life, and that if there be a variation from it, those means which will restore the thermal equilibrium are the most direct and important.

The difficulty in the way of using the thermometer to determine the temperature of the body, seemed to be in a want of sensitiveness, and precision in marking fractions of a degree. This has been overcome by employing a large quantity of mercury in the bulb, and a short stem graduated from 80° to 115° . By thus increasing the quantity of mercury, the degree, as marked upon the scale, was so lengthened that it could readily be divided into fourths, and even eighths or tenths. And the sensitiveness to heat was in direct proportion to the increased length of a degree as marked upon the scale.

A *registering* thermometer is one in which a small portion of mercury is detached from the main column in the stem of the instrument. This detached portion is elevated by the expansion of the mercury below, which ascends in the stem below it, and thus marks the degree of heat. But it is not influenced by the descent of the main column, but remains in its place, thus acting as a register. In using this thermometer, the detached portion of mercury is lowered in the stem below the register by giving it three or four gentle taps with the hand from below.

As the instruments require great accuracy in manufacture, they exceed in price the ordinary thermometer. Yet very good instruments may be purchased for \$2.50 to \$5.00; the self-registering, in morocco cases, I would recommend as preferable.

It may be remarked, that we employ thermometers graduated to Fahrenheit's scale, but some of the

cheaper German instruments have the scale of Reaumur or Centigrade.

APPLYING THE THERMOMETER.—The majority of writers direct that the thermometer be applied in the axillæ, as it is there completely enclosed and surrounded by the soft parts. When it is convenient, as in some acute diseases, the person being in bed, I think the axillæ the best, yet there are many cases when we should like to test the temperature, that it would be very inconvenient for the person to unfasten the clothes to reach this part. Women, especially, will object to this method of examination.

To suit these cases, I apply the bulb of the thermometer under the tongue, having the patient close the mouth. This is much more convenient, and so far as my experience extends, just as reliable.

The thermometer should be retained in its place from three to five minutes, as it requires this length of time for the full influence of the body's heat. It is well also, in some cases, to watch the register to see how *rapidly* the mercury rises, as there is much difference in this in different cases, and it also becomes an element in diagnosis.

RANGES OF TEMPERATURE IN HEALTH.—The standard temperature of the healthy body is 98.5° , and is subject to a slight variation during the day of about 0.820° . The maximum temperature is in the early morning; it fluctuates and gradually decreases during the day, and is lowest at midnight.

“The observations of Drs. Edwards and Davy have shown that the amount of animal heat may be considerably altered by a number of collateral circumstances.

But the great distinction between these alterations of temperature in health, and those which are the result of disease is, that these variations are generally temporary, and within narrow limits—amounting to mere fractions of a degree—rarely more than 1.8° Fahr. to 3.6° Fahr. whereas those which are due to disease are persistent so long as the disease exists.

“The following are the collateral circumstances which mainly influence animal heat in our daily life, and which require to be remembered in order that erroneous conclusions may not be drawn: 1. *Active exercise* [not carried to the extent of exhausting fatigue] raises the temperature proportionally to the degree of muscular exertion made. 2. *Exposure to cold* without exercise lowers the temperature. 3. Sustained mental exertion reduces temperature about half a degree. 4. The amount of heat is also reduced by a *full meal* and the use of alcohol; but it rises again as digestion advances. 5. There are diurnal fluctuations capable of being thus determined. 6. The temperature of the body rises with the temperature of the air; and sudden transitions from a cold to a hot climate induce a feverish state marked by increase of temperature on bodily exertion. 7. The average temperature within the *tropics* is nearly 1° Fahr. higher than in temperate regions. 8. The temperature is more readily and rapidly affected—more sensitive, so to speak—than either the pulse or the respiration; and this is especially the case in disease.”—*Aitken*.

RANGES OF TEMPERATURE IN DISEASE.—We have to study both an *increase* and a *decrease* in the temperature of the body, the first being of most common occurrence

and having the greatest range. Thus whilst a decrease of but one degree, if maintained for a considerable time, will result in death, an increase of two to four degrees may be maintained for a month with safety to life.

The increase of temperature is usually proportionate to the frequency of the pulse, *one degree corresponding to an increase of ten beats per minute.* Thus :

With a temperature of	98°.....	pulse of	60
" " "	99°.....	"	70
" " "	100°.....	"	80
" " "	101°.....	"	90
" " "	102°.....	"	100
" " "	103°.....	"	110
" " "	104°.....	"	120
" " "	105°.....	"	130
" " "	106°.....	"	140

This table is for adult males of good development, and will not apply to those of feeble constitution, of sedentary habits, or of a nervous temperament. In such, with a normal temperature of 98°, the pulse would be 70 or 80, and the increased frequency to each degree would be but six or eight, until the 103° was passed.

In chronic disease we also find an increase of temperature, and the thermometer becomes almost as certain a means of diagnosis and prognosis as in febrile and inflammatory affections. Thus, for instance, in phthisis pulmonalis, we find a permanent increase of temperature to 99° and 100°, in the first stages, increasing to 101° and 102°, as the disease progresses. This increase is so uniform that it will furnish the best evidence of the nature of the disease in its earliest stage. The frequency of the pulse corresponds to the increase

of temperature. Breaking down of the tubercles is announced by a marked increase of temperature, corresponding to the destruction of lung tissue, and the danger to life.

In acute fevers and inflammations, we find the temperature increasing in the ratio of the severity of the disease. It does not, however, remain uniformly the same throughout the twenty-four hours, but presents a marked morning decline and evening elevation. This is very distinct, even in continued fevers, which we are accustomed to think of as being uniform in all their phenomena. This fluctuation is rarely less than one degree, and is frequently two degrees or more.

The value of the thermometer, as a means of diagnosis, is thus estimated by Dr. Aitken :

“ In the course of many diseases, whose diagnosis has been accurately determined, if the temperature departs from its normal or typical range, the thermometer will furnish the best and the earliest indication of any untoward event, such as the additional development of disease, or other visceral complications, in its course.

“ When once the typical range of temperature (*normal*, as it were, of the particular disease) is determined, a basis is laid for appreciating irregularities or complications in its course in particular cases. For example, a patient exhibits symptoms of fever of the typhoid type, but during the progress of the first week his temperature becomes normal, for however short a space of time—the occurrence of this event proves that the fever is not what it was supposed to be. Again, a patient may suffer from all the general symptoms of incipient pneumonia ; but there still is a doubt as to whether infarction of the lung has taken place. The sputa being

suppressed, or not procurable, does not assist the diagnosis. If, however, the temperature is found to be normal, it is certain that no croupous exudation has taken place in the lung, and that there is no pneumonia. Again, if a tuberculous patient has a sudden attack of hæmoptysis, and if the temperature of his body is normal during and subsequent to the attack, no reactive pneumonia, nor any exacerbation of the tuberculous exudation need be expected. This is a new field open for investigation in cases of phthisis.

“Again: In all cases of convalescence, so long as the defervescence proceeds regularly, as measured by the temperature, no relapses need be feared; on the other hand, delayed defervescence in pneumonia, the persistence of a high evening temperature in typhus or typhoid fever, or the exanthemata, and the incomplete attainment of normal temperature in convalescence, are signs of great significance. They indicate incomplete recovery, supervention of other diseases, unfavorable changes in the products of disease, or the continuance of other sources of disturbance requiring to be carefully examined into. The onset of even a slight elevation of temperature during convalescence is a warning to exercise careful watching over the patient, and especially for the maintenance of a due control over his diet and actions.”

THE INFLUENCE OF TREATMENT ON THE TEMPERATURE.—By reference to table on page 160, it will be noticed that there is a constant relation between the frequency of the pulse and the temperature: that with a range of temperature of 103° to 105° , we find a pulse ranging from 110-115 to 130-140. It is evident, there-

fore, that if we have any means that will control the circulation—lessening the frequency of the pulse—it will also lower the temperature.

The question then arises, if a treatment will thus control the pulse and temperature, may it not change a severe and dangerous case into a mild one without danger? We answer this question in the affirmative, not as a theory, but from observations on many cases of disease.

I think I am justified in stating, as an axiom, that just in the ratio that the circulation is thus controlled, and the temperature reduced, the fever is rendered mild.

I wish it distinctly understood, however, that I refer only to those influences which can be continued for some days, and not to those which endure but a few hours. The use of large doses of *Veratrum* will bring down the pulse from 120 to 60 or 70 beats per minute, in six to ten hours, and with a corresponding reduction in temperature; but it is not possible to continue this influence, as in a few hours the stomach becomes irritable and rejects it, or the depression of the sympathetic nervous system is such as to peril life.

But if the remedy is given in doses of half to one drop, sedation is slowly produced, the stomach receives it kindly, and instead of depression of the vegetative functions, the remedy acts as a stimulant to them.

But is it possible to arrest a fever before it has run its course? I am satisfied that this question may also be answered in the affirmative. Not that every case can be shortened, for in some the local lesion of Peyer's glands proves an insurmountable obstacle; but many can be arrested from the seventh to the ninth day, more

by the fourteenth, and in nearly all the disease can be restricted to twenty-one days.

A fever terminates naturally—by a decrease in the frequency of the pulse, a diminution of the temperature, and the re-establishment of secretion, by which the cause of the disease is removed. If, then, by the use of sedatives, we lessen the frequency of the pulse, and obtain an equal and uniform circulation, with a corresponding decline in temperature, we find it easy to establish secretion from the skin, kidneys and bowels, by the usual means. And in a majority of cases these processes may be sustained by the use of nutritious food, and the use of small doses of the Bitter Tonics.

But the question arises, does the temperature bear the same relation in chronic disease, and will treatment influencing the temperature have a like curative influence? I answer the question in the affirmative, and adduce as an example phthisis pulmonalis, one of the most intractable diseases we have to contend with.

In this, so long as the increased temperature is maintained, the disease progresses; and very frequently its rapidity is in exact ratio to this. Diminish the temperature, and the disease progresses more slowly. Reduce it to 98.5° , and maintain it at this, and the patient recovers.

The wrong of temperature is but the expression of disease. If the disease is favorably influenced by remedies the temperature falls or rises towards the normal standard. Thus in a given case of disease we may see the pathological wrong, whether of the blood, the nervous system, or of waste and excretion, and at the same time the indications for the remedy which will

right the lesion, and we know that its use will reduce the temperature. Thus in a case of zymotic fever the evidences of sepsis are marked, and with sepsis there must be an exalted temperature. If now we select the right antiseptic, say Sulphite of Soda, Chlorate of Potash or Baptisia, the temperature will fall with its use. If in any given case we have a special indication for Nitric Acid, for Podophyllin, Quinine, etc., they will influence the temperature toward the normal standard.

But in many cases the wrong of temperature may be regarded rather as a cause than as a result. If the temperature is above the normal standard the functions of life are impaired in the ratio of the excess. Thus as we have already seen—increase of temperature is associated with acceleration of the pulse—increase of temperature is associated with frequent respiration. With an increase of temperature there is an arrest of digestion, blood-making, nutrition, waste, retrograde metamorphosis, and secretion from skin, kidneys and bowels. We also find that structural lesions are influenced in the same manner. Inflammation is active in proportion to increased temperature, as is also the tendency to suppuration and death of the part. The influence of zymotic causes of disease is also increased in the ratio of increase of temperature, and the condition known as typhoid is marked in proportion to it. In surgical disease we find the processes of repair arrested when the thermometer marks 103° ; above this the pus loses its laudable character, becomes thin, ichorous, etc., and presently the structures soften and break down.

The fact that increase of temperature is a condition

in many chronic diseases has already been noticed. In phthisis pulmonalis the first advent of disease is announced by a temperature of 100°. In morbus coxarius, white swelling, etc., increase of temperature is one of the most pronounced and distinctive symptoms. In all these cases we may say that the rapidity of disease is in the ratio of increased temperature, and so long as the temperature is thus high no amendment need be expected. If the temperature can be reduced and maintained at or near the normal standard, the destructive processes are less active, and a cure rendered possible.

If we decide that a wrong of the temperature is a cause rather than a result, even though but in part, we wish to know the means by which it may be rectified. The first proposition—"as is the pulse so is the temperature"—gives us the use of the very important class of remedies—the special sedatives. If these remedies exert a direct influence in giving a slower and better circulation, they will also lessen the temperature. Certain remedies especially influence the temperature through the nervous system, as Rhus, Gelseminum, Bryonia, Belladonna, Nux, Nitric Acid. Others influence it through the constitution of the blood, as alkalies, acids, food, etc.

Then again we look to the skin as the regulator of heat in the body. It is possible that a wrong in the condition of this apparatus is the cause, in whole or part, of this lesion. What is the condition of the skin? Is it dry, constricted, full, relaxed? What remedies, in the form of baths, or otherwise, will right these wrongs?

If we take the simple lesion of excess of temperature

and frequency of pulse, as seen in febricula, we will find a cure in the cold wet-sheet pack, as we would in the early stages of a sthenic inflammation. Or in place of this the ordinary vapor bath or spirit-vapor bath might be employed. In many cases with a dry and constricted skin the sponge baths are found to place this organism in better condition, and lessen the temperature.

If a bath is medicated, we select it as we would the internal remedy. If an alkali is indicated internally by pallid mucous membranes, it will be found best for a bath. If an acid is indicated internally by deep coloration of mucous membranes, we will employ an acid bath. If the skin is relaxed and enfeebled, we think of stimulant, tonic, or astringent baths. We employ fatty inunction in two conditions—when the skin is dry and constricted, and when it is relaxed and enfeebled—in both the inunction answers a good purpose. In some cases we combine with it a stimulant, or one of the essential oils; in others we make it a vehicle for the topical application of Quinine.

If the increase of temperature is associated with waste of tissue, we find it important to provide a better fuel for burning, and thus allay the excitation caused by destruction of tissue. Thus in chronic disease we think of Cod Oil, and foods that contain calorific material in excess, and that are at the same time easily digested. In acute disease we furnish similar kinds of food, whilst at the same time we modify the process of combustion as much as possible.

In depression of temperature we find every function of life impaired, but in this case the lesion is always of depression, whilst in the preceding it was most fre-

quently of excitation. It requires but a slight fall of temperature to impair and finally arrest functional activity. With a depression of a single degree a man is sick, and if this is maintained death will result in from two or three days to a week.

In some cases of chronic disease we find a slight depression of temperature, as a part of the lesion. At once we ask the question, what is the cause? Is it dependent upon want of food, or of proper food? A wrong of digestion? An impairment of the respiratory function, and of the burning? Or a wrong of the skin, so that it permits a rapid escape of heat? On the answer obtained to these questions, will depend the treatment.

If it is a want of food, or of calorific food, a right treatment will look to the selection of appropriate kinds. If we find a lesion of digestion, either buccal, stomachic, or intestinal, means to rectify these lesions will be demanded. If it arises from deficient respiration, we will direct such exercise as will call into activity the respiratory function, and facilitate combustion. It is possible there may be a defect in certain materials that favor combustion. Thus in some cases I have found the want to be of Phosphorus, and its administration at once restored the calorific function. In others it may be of Sulphur, or of Soda, or in some cases it would be met by Cod-Oil. Wrongs of the skin, permitting the escape of heat, are readily recognized by the touch, as evidences of relaxation, of exudation of water from the blood, or hyper-activity of the sudoriferous glands. The remedies will consist of stimulant and tonic baths, or sometimes the use of fatty inunction with stimulants or with Quinine.

An irregular or unequal distribution of heat is a source of trouble as well as its increase or diminution. If we have too much heat in one place and too little in another, we will find associate wrongs of circulation and innervation, and there will be impairment of digestion, blood-making, nutrition, waste, retrograde metamorphosis, and excretion. Wrongs of the blood are likewise increased, and there is the tendency to deposits of imperfectly formed albuminoid material. Local diseases are also more severe, and the tendency to structural changes more marked.

In chronic disease we will frequently find that no improvement takes place until the wrong of temperature is rectified. Getting well may hinge on getting the feet warm. With cold feet, remedies which seem adapted to the case, continually fail; warm the feet, even by sprinkling Capsicum in the stockings, and the patient improves at once. In some of these cases topical means will be all-sufficient, but in others we will have to employ such as give strength to the circulation and improve innervation.

In acute disease unequal temperature is one of the most unpleasant symptoms met with, and it is always looked for in the advanced stages of severe disease. The experienced physician examines the patient's toes, his knees, his ears, the tips of his fingers, with as much interest, as he examines the pulse. If he finds coldness of these parts, he is at once awake to the necessity of every means for the conservation of life, whether it has reference to means to prevent undue expenditure, or such as will increase the forces of the body. Coldness of parts distant from the heart at once suggests the idea of alcoholic stimulants as food, to be supplied.

mented, as soon as may be by such foods as seem best adapted to the case.

Changes of *kind* in temperature will not be recognized by the thermometer, and hardly by the physician who prides himself on being "scientific." "*Kinds* of heat indeed! there is but one heat, and it is nonsense to try to make a distinction in kind" (?) This is all very well, but the practiced physician knows that there are *kinds*, at least in so far as his sensations are concerned, and that these "kinds" tell him of definite lesions, and point to remedies. We do not know just why we have varying sensations of kind, but we do even in warming apparatus. The sensation of heat is not the same from a coal stove, an open fire, hot water pipes, or a Dutch earthen-ware oven. And the sensation of heat by the hand is not the same in simple febricula, remittent fever, typhoid, typhus, yellow fever, scarlet fever, etc. The kind is unmistakable, and becomes more and more so as the wrong of the blood and of the nervous system increases.

If one applies the hand upon a surface from which a sinapism has been recently removed, a peculiar sense of "pungency" is experienced. Quite as distinct a sensation comes in severe scarlet fever, in malignant rubeola, and in diseases characterized by the symptoms known as typhoid. We get a similar pungent heat when there is great excitation of the sympathetic and spinal nervous systems. We may say then, that this character—pungent heat—which is so readily recognized by most persons, refers us to lesions of the blood—sepsis, and to lesions of the nerve centres—excitation. We at once think of antiseptics as appropriate remedies, and select the particular one by symptoms already

named. In so far as the nervous lesion is concerned, we will be guided in the selection of remedies by the facial expression and by the pulse.

It is possible many times, to determine the character of a local lesion by the sensation given the hand. Thus one very readily recognizes the peculiar pungent heat of erysipelas, and sometimes the touch will determine the advent of this lesion in surgical disease before the eye would recognize the change of color, or the intumescence of tissue. The hand placed upon the abdomen will feel the advent of puerperal inflammation before it will be recognized by ordinary symptoms. There is very much to be learned in this regard, and it is well to give it thought and experiment.

DIAGNOSIS BY THE EAR.

The ear may not be as important in diagnosis as the eye or touch, yet we purpose employing it to its fullest capacity. To the routine physician who asks questions and depends for his knowledge of disease upon what the patient tells him, it is the organ of greatest importance. But we have already seen that we do best when we study disease with our senses, and depend but little upon what the patient says.

If the reader will refer back to our study of facial expression, he will notice the statement that wrongs of life find expression through the usual channels of expression; where the nerve currents have been most in the habit of flowing in health, they incline to flow in disease. Mankind use the facial muscles to express their feelings or sensations, and hence disease is ex-

pressed in the face. For the same reason we should expect to find wrongs of life expressed in the voice, in all animals using the voice, and especially in man who finds it a principal instrument of expression.*

*The character of the human voice, under the influence of various emotions, has been discussed by Mr. Herbert Spencer in his interesting essay on Music. He clearly shows that the voice alters much under different conditions, in loudness and in quality, that is, in resonance and *timbre*, in pitch and intervals. No one can listen to an eloquent orator or preacher, or to a man calling angrily to another, or to one expressing astonishment, without being struck with the truth of Mr. Spencer's remarks. It is curious how early in life the modulation of the voice becomes expressive. With one of my children, under the age of two years, I clearly perceived that his humph of assent was rendered by a slight modulation strongly emphatic; and that by a peculiar whine his negative expressed obstinate determination. Mr. Spencer further shows that emotional speech, in all the above respects is intimately related to vocal music, and consequently to instrumental music; and he attempts to explain the characteristic qualities of both on physiological grounds,—namely, on “the general law that a feeling is a stimulus to muscular action.” It may be admitted that the voice is affected through this law; but the explanation appears to me too general and vague to throw much light on the various differences, with the exception of that of loudness, between ordinary speech and emotional speech, or singing.

That the pitch of the voice bears some relation to certain states of feeling is tolerably clear. A person gently complaining of ill-treatment, or slightly suffering, almost always speaks in a high-pitched voice. Dogs, when a little impatient, often make a high piping note through their noses, which at once strikes us as plaintive, but how difficult it is to know whether the sound is essentially plaintive, or only appears so in this particular case, from our having learnt by experience what it means! Rengger states that the monkeys (*Cebus asaræ*), which he kept in Para-

As we come into the sick room we give attention to the voice of the sick person, quite as much as we do to what he is saying. We find that it expresses strength and weakness, is free or difficult from local disease, and shadows forth the condition of the brain in its tone, which varies from the listlessness of atony to the querulousness of excited feebleness, and the excitation of over activity.

In studying the voice as the expression of disease, we recognize its three-fold bearing, as it refers us to a general impairment of life, a lesion of the brain, and to lesions of the respiratory apparatus. If we did not keep these sources of wrong in view we might make serious mistakes. If, for instance, we have feebleness of voice, it may be due to general impairment of life, to impairment of the functions of the brain, to deficient innervation from the spinal cord, or to a lesion of the respiratory apparatus.

Whilst *strength* of voice is usually regarded as evidence of good vital power, and a good respiratory apparatus, it will not do to place too much dependence

guay, expressed astonishment by a half-piping, half-snarling noise; anger or impatience, by repeating the sound *hu hu* in a deeper, grunting voice; and fright or pain, by shrill screams. On the other hand, with mankind, deep groans and high piercing screams equally express an agony of pain. Laughter may be either high or low; so that, with adult men, as Haller long ago remarked, the sound partakes of the character of the vowels (as pronounced in German) *O* and *A*; whilst with children and women, it has more of the character of *E* and *I*; and these latter vowel-sounds naturally have, as Helmholtz has shown, a higher pitch than the former; yet both tones of laughter equally express enjoyment or amusement.—*Darwin*.

upon it in these regards. It certainly evidences good innervation from the brain and spinal cord. But if these nerve centres are sound, active, and well supplied with blood, we may have a strong voice, even though the body at large is nearly exhausted. Usually it is a favorable symptom.

Feebleness, on the contrary, evidences a lesion of atony, either of the body at large, of the brain or mind, of the spinal cord, or of the respiratory apparatus. Whilst the probabilities are in favor of its being a nervous lesion, we will not take it for granted, but make such examinations as will localize the lesion. Feebleness simply, without querulousness, suggests the use of Phosphorus, the Hypophosphites, Cod Oil, Alcohol as food, Iron, Arsenic, Quinine. If it is associated with a marked effort from the will, and a sighing respiration, we refer it to deficient innervation from the spinal cord, and think of Strychnia, Ergot, or Santonine as remedies. In lesion of the respiratory apparatus there will be change in the voice other than feebleness.

It is difficult to give a name to the peculiar expression of voice associated with nervous irritation and vascular excitement, yet the reader will learn to recognize it readily, and may frequently be able to determine these characters of disease by simply hearing the patient speak. There is a sharpness, and want of smoothness, representing pretty accurately in degree the amount of disease.

The halting voice, evidencing a labored action of the brain, tells the story of congestion, and suggests the use of Belladonna, or if markedly halting, of Lobelia.

The oppressed voice, hollow and unsteady, evidences a general impairment of life, and calls for stimulants, tonics and food.

The oppressed voice from the upper part of the lungs suggests deficient innervation to heart and respiratory apparatus, and causes us to think of stimulant doses of Lobelia.

Sharpness of voice suggests nervous excitation, and will sometimes point to *the* remedy, as in the peculiar sharp accentuation of the Rhus voice, resembling the *cry encephalique* of the child.

The cry of the child will frequently inform the physician of the location and character of the disease. Of course we recognize the fact that there may be but little change in the cry, or that there may be changes without corresponding disease, but we have other means of diagnosis to supplement this, and prevent error. Physicians who have given this subject attention will recall the peculiar cry of abdominal distress, the change which marks disease of the respiratory apparatus, the oppressed cry of congestion, the shrill, metallic cry of inflammation of the brain, etc. It does not take much observation to distinguish the cry of disease from the cry of hunger, or anger.

In the preceding paragraph a peculiar cry, *encephalique*, was noticed, which is so distinctive that it will never be mistaken. Its suddenness and shrillness is characteristic. In its slighter forms it arises from cerebral irritation and determination of blood, and calls for Gelsemium as the remedy. When marked and shrill, I should always think of Rhus Toxicodendron as the remedy.

A sudden cry, followed by sobbing respiration, is a prominent indication for Bromide of Ammonium.

The voice is the function of the larynx, and its changes will point us to disease of this organ. The

croupous cry and voice is quite as distinctive as the croupous cough. If it evidences moisture, we have mucous croup; if it is dry and metallic, pseudo-membranous croup; if variable in tone and character, spasmodic croup.

In chronic disease of the larynx, roughness of the voice is one of the first symptoms. As the disease progresses, we have various changes in the voice and difficult use of it, as characteristic symptoms.

In chronic bronchitis we also find change, but not similar in kind. It may give the voice shrillness, as in irritative bronchitis, or dullness, hollowness, or reverberation, as in asthenic bronchitis.

COUGH.—Whilst cough calls our attention to a probable disease of the respiratory apparatus it does not indicate with any certainty the character of the disease. But even to this extent it is important, for it is possible to overlook local disease, from the prominence of general symptoms.

Whilst cough is usually the expression of disease of the respiratory apparatus, it may have its origin in other diseases. Thus we find cough from gastric, biliary and intestinal lesions, and from disease of the nerve centres, and our examination is made with reference to these probable causes in obscure cases.

Cough is the expression of irritation, and comes from the sense of an irritant material in the respiratory passages, which it is intended to remove. But many times there is nothing to be removed—it is a misconception of the respiratory nerves, which suffer from irritation, and we wish to determine whether or not the effort is to be favored. In the larger number of cases expecto-

ration is undesirable, and if we remove the irritation of the nerves the cough ceases.

A little attention upon the part of the physician will determine this point, as it is quite easy to distinguish the cough necessitated by increased secretion, and attended by expectoration, from the inefficient, rasping cough of irritation. In either case, but especially in the last, an effort of the will is of marked benefit in checking cough.

The character of the cough expresses to some extent the condition of the respiratory passages. If dry, ringing, metallic, we think of irritation, determination of blood, and arrest of secretion, and the remedies at once suggested are those which allay irritation, check determination of blood, and favor normal secretion. If moist, rattling, gurgling, dull, stimulants to the respiratory passages, as well as remedies to relieve irritation are suggested.

A cough is more or less forcible, and more or less easily under the control of the patient. If forcible, not under control, or explosive, we at once suspect a wrong of the nerve centres, usually of the basilar brain, and select remedies accordingly. Of course we may have such uncontrollable cough from local irritation, especially of the throat, but this will be readily recognized by the expression, as well as from the patient's sensations.

A cough has more or less evidence of strength, both of the respiratory apparatus, and of the body at large. The strong, well sustained cough may be a source of annoyance, but evidences good vitality and a naturally good condition of the respiratory organs. A feeble cough, on the contrary, is the evidence of debility, and

at once suggests the necessity of care in the conservation of life, and the employment of means which will give strength, especially the selection of proper foods. A cough may be feeble from deficient spinal innervation, and spinal stimulants would prove the best remedies.

Coughs are spoken of as short, hacking, deep, bronchial, etc., and these characteristics may suggest the locality of disease. A short cough may arise from disease of the upper lobes of the lungs, or it may be due to disease of the parenchyma of the lung, as in the first stage of a pneumonia. The hacking cough evidences irritation of the respiratory nerves pointing in the throat. The deep or bronchial cough is at once referred to lesions of the bronchial tubes, though it is not as good evidence as we would wish.

A cough may have its origin in irritation of any part of the respiratory apparatus, from the pharynx, larynx, trachea, bronchial tubes, parenchyma of lungs, to the pleura. As named above, its character may suggest the seat of disease, but as a rule, it is not definite. A singular thing about coughs is, that the irritation points so that many times the patient can localize the sensation of irritation for us. Cough very frequently points in the pharynx, and the irritation of the throat seems to be its direct cause; such a cough is based to a considerable extent upon irritation of the respiratory nerves, and remedies directed to relieve this will be the best cough medicines. In other cases cough points about the supra-sternal notch, and if very severe and persistent suggests the use of remedies which influence the sympathetic nervous system, as *Veratrum*, *Bryonia*, *Cactus*, *Pulsatilla*.

Coughs may be spasmodic and paroxysmal, even in severe cases, showing distinct, epileptiform symptoms. Whooping cough is the typical spasmodic cough, but we have in the cough of measles, and some diseases of the respiratory apparatus, the same characteristics. It suggests *Drosera*, *Belladonna*, and Bromide of Ammonium.

PHYSICAL DIAGNOSIS.

Diseases of the respiratory organs and the heart are diagnosed in part by an exploration of the chest with the ear. Whilst an examination of the chest with the eye and the touch will determine something of the character of disease, and direct our attention to remedies, our reliance will be placed principally upon what we hear.

In the case of the respiratory organs, a very important part is to determine the capacity of the lung for air, or the amount of air contained in the chest, and this is accomplished by percussion. The walls of the chest are thin and elastic, whilst the lung which fills it contains normally four or five times as much air as there is of solid substance. Any elastic body containing air will give resonance when struck, and the resonance will be in proportion to the amount of air. Lessen the amount of air, replacing it with a solid or fluid, and dullness of sound is the result.

The object of percussion then, in diseases of the respiratory organs, is to determine the condition of the parenchyma of the lungs with reference to capacity for air. By examination of the healthy thorax we obtain a standard of normal resonance for different parts of

the chest, and this we use as a basis for comparison. In many cases, but one side of the thorax being involved in disease, a comparison is instituted between the sound and the diseased side. In such cases, of course the information is more accurate, as we have the normal standard of resonance before us.

Percussion is either direct or mediate, as we strike directly upon the wall of the chest, or interpose something between. Direct percussion may sometimes be employed with advantage, using one or two fingers to give the blow. The only objection to this method is the unpleasantness to the patient, and the difficulty of making percussion of the intercostal spaces. In mediate percussion an ivory or rubber plate (pleximeter) is sometimes employed, using the finger for the stroke, or a small mallet of similar materials. The best method, however, is to apply one or two fingers accurately to the wall of the chest, and use the middle finger, supported by the ring finger and thumb to give the stroke. It is necessary to use care in this, the fingers of the one hand being accurately applied to the chest, and the stroke being at right angles, and the muscles of the hand held firmly so as to give a quick rebound.

As the object to be determined is the capacity of the lung for air, we make percussion both during full inspiration and after expiration. In examining the margin of the lungs over the false ribs and the sternum, it is necessary to have the patient take a full inspiration to carry the lung down to the insertion of the diaphragm in the one case, and to the mesial line in the other. In making percussion over muscles it is well to put the body in such position that the muscles will be rendered tense. In examinations about the shoulder, it is raised

to allow our examinations to be carried up in the axillary space, or thrown forward or backward, to enable us to reach the upper part of the chest.

In making comparison between the two sides, we are careful that there is the same degree of inflation, and it is better to have the patient take a full breath, and hold it as long as he can conveniently, or cease respiration for a moment, after the air is thrown out.

Normal resonance tells us that the parenchyma of the lung is free from effusion, it may be the seat of irritation, but the capacity for air is not interfered with.

Increased resonance in slight degree is heard when the function of one lung being impaired, the other does an increased work. In greater degree it is the evidence of emphysema. When very marked, and over a limited portion, it is the evidence of a cavity.

Dullness on percussion evidences that the air is replaced by a solid or fluid; as is the degree of dullness, so is this change in the physical condition of the lung. We have dullness in acute pneumonia commencing about the third day, sometimes earlier, and increasing as deposit takes place in the air cells and intercellular passages, and in the connective tissue—as is the dullness, so is the intensity of the disease. Resonance returns when the circulation is restored, and effused materials are absorbed. Dullness is also an evidence of chronic inflammation of the lungs, being usually much more extensive than in phthisis pulmonalis, for which it might be mistaken. Dullness on percussion is heard in phthisis, when the tubercle is deposited in considerable quantity and near the surface. In the earlier stages the dullness is so slight that it is not an important evidence of disease.

We have dullness on percussion where there is fluid in the pleural cavities, whether it is simply of water, or the products of inflammation. In this case the dullness is of the most dependent part, and unless it is an extreme case, changing the position of patient, will change the situation of the dullness.

We have dullness on percussion in hydropericardium, and to a limited extent in hypertrophy of the heart. The situation of the dullness, and the change in the sounds from the heart, will determine the condition of disease.

Occasionally we have dullness on percussion from the formation of a thoracic aneurism, and still more rarely from growths in the cavity of the chest. Other symptoms will determine the character of the wrong.

The reader will notice that in acute disease dullness on percussion has reference mostly to effusion into, and solidification of the parenchyma of the lung. The extent of the dullness determines the amount of tissue involved, and its intensity determines, to some extent, the severity of the lesion. In so far as it suggests treatment, it would say—lessen irritation and determination of blood to the lungs—give the respiratory apparatus rest—by appropriate food, and in so far as medicines act to sustain the life of the part, and of the body at large—and by the establishment of secretion, promote the absorption of the effused material.

Percussion is sometimes employed in other parts than the thorax to give evidence of disease. Thus we find that some wrongs of the stomach, of the liver, spleen, bowels, and reproductive apparatus, give rise to changes in the sounds heard on percussion.

Disease of the stomach with generation of gas, will

be evidenced by marked resonance on percussion over the stomach. In some cases of chronic disease, this condition is persistent, and the continually distended stomach is pressed upwards until it occupies considerable space, and resonance might lead us to suppose that a cavity had formed in the inferior lobe of the lung, had we not symptoms of gastric lesion, and the resonance extending across the epigastrium.

On the right side an enlarged liver pressed upwards encroaches upon the cavity of the chest, and gives marked dullness on percussion over the right false ribs. The evidences of wrong digestion, and the fullness at the margin of the ribs will correct the diagnosis.

In distension of the bowels by gas, we get the evidence of resonance on percussion. If of the small intestine it occupies the anterior part of the abdomen; if of the large intestine it is lateral, or in the situation of the transverse colon.

In ascites the small intestine distended with gas floats at the top, and though we get the dullness of water below, and succussion on palpation, there is resonance at the highest part, if the convolutions are free to move.

In ovarian dropsy, on the contrary, the sac displaces the small intestine as it grows, and either crowds it upward or backward. Intestinal resonance on the surface, in dropsy, is therefore one of the differential points in distinguishing between ovarian disease and ascites.

We employ palpation to determine the presence of fluid, whether in the cavities, or formed by the breaking down of tissue. In some cases the evidence of fluctuation is very distinct, the wave of fluid passing

distinctly from the hand on the one side, to the hand on the other. In other cases, we only obtain a sense of mobility and the elasticity of fluid.

When parts give rise to sound in the performance of their functions, the character of this becomes evidence of disease. This is the case with the respiratory apparatus, the heart, and to a less extent with some other parts.

Listening to sounds thus produced is called *auscultation*, and as practiced may be either direct or mediate. In direct auscultation, the ear is applied to the part, and the sounds heard. In mediate auscultation, an instrument called a stethoscope is employed as a conductor of sound.

I prefer direct auscultation, as we desire to hear the exact sounds produced, neither intensified nor modified. It is quite as easy to apply the ear as a stethoscope, and except in some rare cases of cutaneous disease there is nothing objectionable in such examination. It is claimed that female modesty might be shocked by this direct examination, both of the chest, and especially of the lower abdomen to detect the beatings of the foetal heart. But I confess that in my professional life I have met with but little of this mock modesty.

The special value of the stethoscope is the impression it makes upon the public. In the olden time the physician carried a gold or ivory headed cane, or rather a staff, to give him an appearance of dignity, and the professional pose, as shown by Hogarth, with the head of the cane pressed against the nose or forehead, in profound thought, is a fair representation of the dignity "that pays." As the physician's cane has gone out of fashion, the stethoscope, and instruments of

similar kind came in to sustain the dignity of the profession.

Stethoscopes are made in varied forms, from the simple short wooden cylinder (with a hole through it) to the double ear-tube instrument of Camman. Some are so illy adapted to their use, that scarcely anything can be heard, except the unpleasant roaring from ill adaptation to the ear. The best stethoscope is a simple cylinder of solid wood, with the one end adapted to the walls of the chest, and the other to the physician's ear. It may be long or short, or have any shape the taste of the maker may give it, if it possess the characters named, it will answer its purpose well.

In the practice of auscultation, whether direct or with a stethoscope, the physician is careful to avoid adventitious sounds, and to place his body in a convenient position for listening. The rubbing of clothing, either upon itself, or against a stethoscope, will frequently mask the sounds we wish to hear. A constrained position of body frequently interferes with listening.

In auscultation of the chest in health two respiratory sounds are heard—the respiratory murmur, and the bronchial sound. The first is heard during inspiration and expiration over the entire surface of lung; the second is heard by applying the ear over the spinal column from the middle cervical region to the sixth dorsal vertebra—the spinal column being a good conductor of sound. If the normal respiratory murmur is heard we know this portion of the parenchyma of lung is healthy; if it is changed in character, or replaced by adventitious sounds from the air cells and small passages, we know that there is disease.

In studying auscultation, it is well to study in the language most familiar to us. If we are original Romans we may pursue the study in Latin; if French, we may use French technical terms; but if English is our mother tongue, we had better employ English, and use words with especial reference to their meaning. I think it is possible to so classify and name the morbid sounds that the reader can learn them without trouble.

We may say first, that a wrong sound made in the respiratory apparatus is evidence of disease of this apparatus. We want then to determine the value of the sound, and the distinct lesion that produces it.

To this end, the first question is as regards the medium for the conduction of sound. Solids conduct sound best, fluids next best. Air stands next as a conductor, and mixed bodies last. The lung, with its spongy tissue filled with air is a bad conductor of sound. If it is solidified, it becomes a good conductor, and sounds will be heard, which otherwise would not reach the ear. Fluids compressing the lung are also good conductors of sound. To determine this point, then, percussion is made—if there is resonance the sound is referred wholly to a wrong of the part where it is produced; if there is dullness on percussion, it is referred in considerable part to the consolidation of lung, or to the effusion, which gives a better conductor of sound.

Morbid sounds may be divided first into blowing and crepitant, having reference to the parts in which they are produced. Blowing sounds are produced in bronchial tubes, and crepitant sounds in the intercellular passages and air cells.

Blowing sounds *are* blowing. The idea the listener

gets is of air blown through a tube possessing some elasticity. In the blowing sounds heard in diseases of the respiratory apparatus, the listener gets an idea of obstruction; the air does not pass as freely as in health. In one case the sense is of constriction—evidently the calibre of the tube has been diminished—the sound has the higher tone or shrillness that would be thus produced. In another case the obstruction is evidently within the tube, either from fullness of mucous membrane, or from increased secretion, and the sounds are lower in tone—duller—or show the evidence of mucus in more or less of gurgling. In a third class of cases, the obstruction is evidently from want of elasticity and tone in the tube, which yields before the passage of air, both in inspiration and expiration—the wavering tone of the sound determines this condition.

In so far then as we have analyzed the simple character blowing, we have suggested to us a rational practice of medicine. Contraction of bronchial tubes is in the majority of cases from irritation—employ those remedies which take away the irritation. Fullness of mucous membrane suggests the use of means to relieve determination of blood, and to promote absorption. Increased secretion suggests the employment of means to take away irritation and determination of blood, and check secretion. Whilst the wavering sound indicating atony, calls for stimulants, tonics and restoratives.

Blowing sounds are *dry* and *moist*, and these common words express clearly the idea formed upon hearing the sounds. They *are* dry and moist, as they refer to a condition of dryness or moisture of the mucous lining of the bronchial tubes.

Dry blowing sounds evidence a condition of bronchial

tubes in which there is an impediment to the free passage of air, and more or less arrest of the normal mucous secretion. Dryness itself is an impediment to the passage of air, but in addition there is contraction of the bronchial tubes. We are in the habit of saying—as is the blowing, so is the contraction of the tubes—as is the sound of dryness, so is the arrest of secretion.

Contraction of bronchial tubes results from irritation, and it suggests that such means be employed as will relieve irritation. Dryness results from irritation, determination of blood, and the developed inflammatory process. Given a dry blowing sound, we at once think of general and local sedatives which lessen determination of blood, remedies which allay irritation, remedies which so rectify general lesions of circulation and temperature as to permit secretion, and remedies which restore secretion, if such be necessary. Thinking in straight lines, our ear gives us information of the condition of the air passages, we at once think of the pathological states, and having the factors of disease before us, we at once think of those remedies which restore normal functional activities.

Moist blowing sounds tell us of obstruction to the free passage of air, and to the pressure of fluid in the air passages. As is the blowing so is the impediment to the passage of air; as is the moisture, rattling, bubbling, gurgling, so is the amount of fluid in these passages.

The ear readily determines from the character of the sound, whether the blowing is still due to contraction of the tubes, for in this case the sound is steadier and more resonant, than if caused by obstruction from accumulated fluids, or from atony. The well-sustained,

sonorous sound always means contraction—contraction results from irritation—use remedies to lessen or take the irritation away.

The impediment from secretion of mucus, muco-pus, or purulent fluid is clearly expressed in the sounds heard, and it is well to take the evidence of the ear, rather than any technical classification of sound. The presence of just sufficient secretion to lubricate the passages, of occasional accumulations which need removal by expectoration, of continued accumulation, giving rise to rattling sounds like the bursting of large bubbles, or the gurgling which comes from large quantities of fluid, are distinct and unmistakable. The treatment is clear—take away the causes of determination of blood, whether due to irritation of the respiratory nerves, or some general lesion. Give these tissues such support as we can, by the use of remedies that give local or general stimulus and tone. And to a certain extent favor the removal of these accumulations by expectoration—usually by giving strength to the respiratory apparatus.

The evidence of atony of the respiratory passages is found in the yielding or tremulous character of the sound. Whilst the evidence of contraction was found in the *well* sustained sound, this is found in the *feebly* sustained sound. The treatment is clear—to sustain and increase the strength of the patient, and to stimulate and strengthen this enfeebled organism. In some cases alcoholic stimulants give prompt relief, and their effect is maintained by Quinine, restoratives, and food. The local remedy is Lobelia in stimulant doses, and we always think of this, especially in infancy and childhood.

When cavities are formed in the lung, communicating with a bronchial tube, the ear detects a peculiar blowing sound, as of air blown into a bottle. This may be dull and more or less gurgling, showing that the process of removal is not yet completed, and the walls of the cavity are of the spongy, partly broken down lung. Or it may be clear, well sustained, and more or less resonant, showing the removal of deposit, and cicatrization.

Small blowing sounds, varying in character, shrill, whistling, piping, irregular, tortuous, dry, moist, rattling, all combined, in varying proportions, are the best evidences of phthisis pulmonalis. If the reader will think for a moment of the structures involved, the situation of the tubercular deposits, how they must press upon the smaller bronchial tubes, changing their position, making them tortuous, changing their calibre, he will see at once that these are just such sounds as might be expected.

In addition to these small, *queer*, blowing sounds, the ear detects that known as *dry* crackling. During a full inspiration three or four distinct crackling sounds are heard, which seem to the ear very much like the sounds produced by separating two surfaces attached by a glutinous fluid. And undoubtedly this is the condition, for if the tubercle is so deposited as by pressure against a bronchial tube to efface its cavity, the separation of the glutinous walls of mucous membrane would give just such sound.

Crepitant sounds take the place of the respiratory murmur, and are formed in the air-cells, the intercellular passages, and the minute bronchial tubes. When, therefore, small crepitation is heard, we refer it at once

to disease of the parenchyma of the lung. If we inquire into the condition of the lung—the changes of structure that will produce such sound—we find it in irritation, determination of blood, and slight effusion into these minute air passages. If the effusion goes on, the lung is rendered impermeable to air, and the crepitant sound ceases.

Crepitance is therefore the evidence of inflammation of the lung in its first stage, and is associated with resonance on percussion, for the disease has not progressed to hepatization. Where effusion has taken place to the extent of giving dullness on percussion, the crepitant sounds are replaced by blowing sounds from the bronchial tubes, the lung being now a better conductor of sound. Larger crepitance refers us to the minute bronchial tubes, and is the evidence of capillary bronchitis. The smaller crepitance is not only heard in the first stage of an inflammation of the lungs, but returns with the absorption of the effused material, and resolution, and is therefore the evidence of the subsidence of the disease.

As crepitance is the evidence of the active stage of an inflammation, in which irritation and determination of blood are the prominent factors, the treatment is plain. In so far as we can take away the irritation, and stop the determination of blood, our treatment will be rational. The frequent pulse, the high temperature, and the rapid respiration, are important elements in the furtherance of the local disease, and means which will rectify these wrongs, are of first importance. As the succeeding stage is one of local depression of life, no means should be employed that will depress either the life in general, or of the affected part.

Where solidification of a lung has taken place, it becomes a better conductor of sound, and if now the ear is applied and the patient is engaged in conversation, the voice seems to come out through the chest. We do not get articulate speech, but simply the modulations of the voice. This is called bronchophony (speaking through the bronchial tubes), but its only value is to determine solidification of the lung, and percussion is the better evidence.

If there is fluid in the chest, and the ear is applied over it, the patient conversing, the voice seems to come out through the chest, but has a tremulous tone. This has been called ægophony, and is one of the evidences of fluid in the pleural cavities.

If the ear is applied over a cavity, which is free and communicates with a bronchial tube, and the patient is engaged in conversation, the articulate voice comes to our ear through the chest. This is called pectoriloquy, and is additional evidence of the formation of a cavity in the lungs.

In some cases of structural disease of the pleura, the result of inflammation, certain friction sounds are heard, but they are not very common, distinct, or definite. Once in a while they are said to assume the distinctness of the "creaking of new leather," but in the two cases I have seen, the sounds were evidently from wring of the parenchyma of the lung, and not from the change of the pleura.

We employ auscultation in the examination of the heart with as much advantage as in diseases of the respiratory apparatus. As the sounds produced by the heart are much louder, and more distinct or arbitrary, many persons will succeed better in auscultation of the heart, than of the lungs.

The normal sounds of the heart are smooth, uniform in tone, regular in time, and give the ear an agreeable sensation. No description in words would give the reader a sufficient knowledge of them; they must be heard to be thoroughly known. It is hardly worth while to call the reader's attention again to the importance of knowing the phenomena of life for himself, and especially with regard to things that may so easily be known by the senses.

If, in examination of the heart, we find that the sounds are normal, we are quite sure that there is not structural disease of this organ. If there are general symptoms of heart disease, the wrong is functional. If, on the contrary, the sounds of the heart are changed, or replaced by adventitious sounds, we are just as sure that there is structural disease of the organ. The two exceptions to these rules are:—1st, in case of anæmia or spanæmia, we hear blowing sounds, which are referred to the wrong of the blood, and not to the heart; and 2d, in fatty degeneration, no change in the sounds of the heart announce the structural lesion.

The morbid sounds of the heart may be divided into blowing and sawing, and the ideas conveyed by these words represent exactly the character of the sound. Whilst blowing sounds may be referred sometimes to lesions of the walls of the heart, and a wrong in muscular contraction, the sawing sounds are referred to the openings of the heart, and to the valves, and usually to lesions that obstruct the free flow of blood.

The blowing sounds have been named *bellows* murmurs, and have every range between the simple, smooth, blowing sound, similar to that heard from the bronchial tubes, to the roughened, irregular, rattling

sound, similar to that produced by a pair of bellows in motion. If the sound is dependent upon poor blood, it may many times be heard over the larger arteries as well as the heart, and in this case will call for the proper restoratives and food to make good blood. If dependent upon enfeebled nutrition, or degeneration of the walls of the heart, we employ means to give the heart rest, see that it is not subject to excitement, and employ means to improve nutrition. The rough, irregular sound that is attributed to valvular insufficiency and regurgitation, would demand the same treatment.

The saw sound has been divided into three varieties, the saw, rasp and file sounds, but the distinction has but little reference to conditions of disease, or to the use of remedies. Possibly the finer sounds may refer us to a more acute condition of disease, in which plastic material is yet being deposited. In some cases of valvular insufficiency we hear a marked saw sound, but it has an irregularity and dullness that we do not meet with in the other cases.

The more common lesions that give rise to contraction of the openings of the heart, and such disease of the valves as prevent their free movement, are inflammatory, and give fibrinous exudation as the result. The most of these are rheumatic in character, involving the tendinous portions of the muscle, and the endocardium. There are rare cases in which the sounds are due to fibrinous vegetations from the valves, or to ossific deposit in their structure.

The treatment suggested by these sounds has reference, first to rest, and secondly, to means which will promote absorption, and give us a better renewal of

life. Rest is absolutely essential to recovery from chronic inflammation and the absorption of its products. We want physical rest, and mental rest, and such relief from irritation of the cardiac nerves as may be obtained from the use of Cactus, Pulsatilla, and the special sedatives. Removal of deposits is facilitated by the establishment of free secretion, and a better heart is made by means to obtain good blood, and good nutrition.

To determine pregnancy after the fifth month the ear is applied over the lower abdomen to hear the beatings of the foetal heart. If it is heard the diagnosis is clear, but if not, we are not yet certain that pregnancy does not exist, for in many cases, from feebleness of the movement of the foetal heart, excess of liquor amnii, thick abdominal walls, or the position of the child, it can not be heard until late in pregnancy, or not at all.

DIAGNOSIS BY THE SENSE OF SMELL.

The sense of smell has less development in the majority of men than any other of the senses—as some writer has recently remarked—“it is yet in the savage state.” It may not be of much use in diagnosis, and yet the little it may tell us we want to know. It requires education, as do the others, and we must learn to distinguish pleasant odors from *stinks*, and thus be able to analyze stinks, and determine their influence upon the human body. It is possible that some persons will never be able to recognize the genus “stink,” much less be able to assort them for our present purpose.

It is well for the physician to commence educating

his nose at home, and to start with a realization of the fact that all unpleasant smells are noxious to the human body. It requires very little exercise of reason to reach this conclusion, for if the thing was not unpleasant or noxious to the economy, the nose would not give the warning of unpleasantness. What is the evidence of disease to the person suffering? *Unpleasantness*; the very expression used, "persons suffering," tells the story of disease. Is disease ever pleasant? No. Are causes of disease ever pleasant? No. Do causes of disease ever pleasantly impress the senses? You might answer yes, but I say no again.

Commencing at home I put my nose inside your office door, and—heaven preserve me—what a compound of stinks, from Asafoetida to Jalap, from Castor Oil to Turpentine. Lesson No. 1, true remedies have no bad odor, clean up your stinks and put them in the nearest privy-vault, and have a thorough disinfection. Reason why—it will be money in your purse—people that pay good bills don't like stinks, as a rule. Let me nose your saddle-bags and pocket-case? Faugh! what a terrible sickly smell!—reminds me of the old country doctor, who was always announced by a mixed smell of Asafoetida and Jalap. It won't do in this age; burn them up, and order a new stock. Now clean up yourself, and get your nose in good working order, that you may learn diagnosis with it. Do you know how to eat onions and go-a-sparking too? Have the maiden taste them. Reverse the simile—if you carry bad smells about you, you will not be able to detect them in the sick room—and it is a most important work, believe me.

When I visit a sick room, my nose commences the inquiry, (it is a most excellent interrogation point),

What provisions have you made for fresh air, sunlight, and cleanliness? It says straightway, the air is bad, there must be ventilation, and opens a window, builds an open fire, and does what is necessary. It noses a stink from under the bed, and suggests half cleaned chamber utensils, excreta, dirty clothes, dirtied floors, etc. It says with emphasis there must be a thorough cleaning up. The excretions must be removed as soon as voided, the utensils thoroughly cleansed and disinfected, every loose thing removed, the floor cleansed, the bed drawn from the wall, and so arranged that the air can pass freely under it. It says you have been trying to feed this patient upon stale, badly prepared food, and it detects it remaining in the room hour after hour, poisoning the atmosphere, and taking away what little desire the patient may have for nourishment. It says, the food for the sick must be nicely prepared, fresh and savory, at such times as he can best take it, and then promptly removed from sight or sense. It says—you are dirty—dirty in person, dirty in clothing, dirty in bed. You must be thoroughly cleaned up, washed with soap and water, have frequent changes of clothing and bed linen—"cleanliness is next to godliness."

You can't hide dirty sheets from this nose, or a bed soiled by involuntary discharges, or a bed sore, a badly dressed wound, however you may try to cover them up. It recognizes the row of nasty medicine bottles, and says, "take them out"—your spoiled poultices and fomentations, and says, "fresh water." It tells you of damp walls, of lack of sunshine, of choked drains, of ground saturated with garbage, of foul closets, of cellars uncleaned, of decomposing vegetables,

and of the hundred and one noxious agencies which breed disease and steal away a man's life.

But it not only tells you of dirt, and specifies cleanliness as the remedy, but it tells of specific agents to destroy causes of disease. I will warrant that you have already associated an unpleasant odor of decay with lime. Lime to freshen the air of cellar, lime to slush a bad drain or cess-pool, lime to make way for sunlight, and to get rid of the *dead* air of a house. You will recognize a sweetish, mawkish, unpleasant odor, similar to that exhaled from smallpox, and it says Sulphurous Acid, as plainly as it can be expressed. You burn Sulphur in the room, or in the whole house, and you are surprised how it changes the air, and how much the patient is benefited by it. In other like cases you sprinkle the floors with Sulphurous Acid, wash the chamber utensils with it, and the dressings in surgical disease. It is not simply to get rid of a bad smell that we do this, but it is to remove a cause of disease.

There are other cases in which a peculiar putrescence reminds you that Chlorine, Carbolic Acid, or Iodine are required. You employ Labarraque's disinfecting solution, or Chloride of Lime, and you see a decided improvement. Or you use a solution of Carbolic Acid, especially as a wash to things which are soiled, to wash dressings, or as an application to wounds, and there is a change for the better. There is a bad odor that simulates the offensive sputa of chronic bronchitis, and some cases of phthisis, which would at once suggest Iodine, and we use it as a disinfectant, a dressing, a local application, or as an inhalation. So too there is an unpleasant odor, peculiar to phlegmonous erysipelas, that says Permanganate of

Potash so plainly that no one can mistake the remedy. I do not wish to place too much stress upon the evidence of this sense, for as stated in the beginning it is but rudimentary, yet some things it does tell us with certainty. A sweetish or mawkish odor from the breath wants Sulphurous Acid, or Sulphite of Soda. An odor resembling an offensive lochial discharge, is the best evidence of the want of Chlorate of Potash. The hot breath, with unpleasant pungence, as of Ammonia, calls for Muriatic Acid. The fetor resembling that from cynanche maligna, calls for Baptisia.

But whether we can distinguish one bad smell from another or not, we know one thing, that they demand cleanliness, good ventilation, and a restorative treatment. Going one step further, they evidence the condition of sepsis or zymosis, and demand that we select the proper antiseptic. If we can select it from the odor, good; if not, and in any case, we have other expressions of disease that will point out the particular remedy required.

If we apply the sense of smell to the excreta we find it of some value, though possibly not of very much. The cutaneous excretion gives a distinctive odor, and in disease we sometimes find marked changes in this. It is not difficult to recognize the pleasant odor from the healthy skin, kept clean, as it is not to recognize the odor of the person kept dirty. In treating children the evidence of our nose is frequently opposed to the evidence of our eyes. The child seems clean, but the unpleasant odors tell you to look beneath the surface, and it is dirty. We find all manner of odors from the person, running the range of "from grave to gay," and they tell the story of disease and vitiated secretion.

Some of these are so characteristic that they can not be mistaken, as for instance, the peculiar urinous smell in tinea capitis.

The urine has a distinctive odor, that may be called healthy. It may lose odor, or it may have a wide range of morbid smells, each of which should have a distinct meaning in the diagnosis of disease. If a Septimius Pease were to study uriscopy, he would probably trust his nose in preference to his eyes.

The seminal odor is so distinctive that it can hardly be mistaken, and as it is very persistent, and may pervade the entire person, it will sometimes give important information. So too is the odor from the sexual organs of both male and female, in certain cases of disease.

The fœtor of the fœces is peculiarly unpleasant, yet the odors are distinctive, and would suggest health in one case, and disease in another. I have no penchant for the olden-time examination of fœces, yet even here I would about as soon trust my nose as my eyes. Possibly the characteristic stinks, already named, will be found here, and the same class of remedies indicated.

INFORMATION FROM PATIENT AND NURSE.

We neglect no source of information with reference to the origin, condition, or progress of disease, and whilst careful not to be guided by information from nurse, friends and patient, we wish to give it its true value. Attention has already been called to the many sources of error. To a want of knowledge and care in observation on the part of nurse and friends, as well

as their prejudices and tendency to distortion. To the want of knowledge upon the part of the patient, want of language for description, and the impairment of his powers of sensation and reason from disease.

The elements of uncertainty are thus very great, and we have to pursue our inquiries with much care. Questions should never be suggestive, but should be so put as to let nurse or patient tell what they know, or to require but the simple and direct answer, yes or no. Careful attention to these points, and a continued guard upon the tongue, will soon form a habit of examination, that will lessen the danger of erroneous information.

We prefer to get information from attendants with regard to the general condition of the sick, and the performance of the essential functions of life. From the patient we desire to know his sensations, as these are changed by disease.

A first examination may take the following course : How long sick ? What are the seeming causes of the sickness ? How did it commence ? What has been noticed with reference to the progress of disease up to the present time ? How does the patient rest in the daytime ? at night ? What food and drink does he take ? How often does he have a motion of the bowels ? How does he pass urine ? These questions may seem suggestive, and once in a while they may take a simpler form as—does he sleep ? does he eat ? does he drink ?

It is most absurd for the attendant to attempt a description of the sensations of the sick, and yet they almost always volunteer to do it. Many times they will be continuously making suggestions to the patient, and lead him into erroneous statements. They will probably have formed some theory of the disease, and

will bend everything to the support of their theory. Physicians are very frequently guilty of this, and should try to get rid of the bad habit which they condemn in nurses.

The question—how do you feel? elicits a loose, wandering description of the patient's sensations, and is only important, in that it suggests special questions and examinations. The question—where do you feel bad? is pertinent, and will elicit valuable information of local disease. It does not do to take it for granted that the patient's anatomical or physiological knowledge is perfect, and that his reference to heart, lungs, stomach, liver, etc., means heart, lungs, stomach, liver. The direction at once follows—put your hand on the place. It is a little singular to find after a patient has located a disease in his own mind, the hand meanders about with uncertainty, trying to find its location. If the unpleasantness is marked, and means local disease, the patient has no difficulty in placing his hand upon the exact spot.

If there is anything uncertain in the patient's manner or method, and especially if uneducated, we wish him to describe his sensations, with the hand upon the affected part. In many cases we will find that the description commences to wander as soon as the hand is removed. There is a reason for this; with the hand upon the part, the mind is directed to it and concentrated, extraneous ideas are rejected, and the description is of actual sensations.

We want to know the character of the pain, its duration, exacerbations and remissions, periods of recurrence, and its influence on function. In this examination the physician should show by his questions and manner that he wants concise and specific answers.

The subject of pain is a study of itself, and much less is known of it than we would wish. In some cases it indicates the special remedy which will cure, in others it simply points to a pathological condition, and remedies must be selected by other symptoms.

Thus if we have a pain in the head, heavy, tense, and sleepy, we give Belladonna; if it is sharp and restless, Gelseminum; if sharp, limited in location, despondent, Pulsatilla. If of the frontal region and orbits, with burning, Rhus; if of the right side passing from before backwards, Bryonia; if of the back of the head, dull and heavy, Iron.

The pain in right hypochondrium, pointing to the umbilicus, indeed, all pains pointing at the umbilicus, Nux Vomica. Pains deep in the ischiatic notches, Podophyllin. Pains that are tensive and paroxysmal, Macrotys.

The pain of Macrotys is a singular one. It feels as if dependent upon tension, and is decidedly remittent—a continued succession of tensive pains. We usually prescribe Macrotys for muscular pain, no matter what its character, *and hit it* in a large majority of cases. For this remittent tensive pain—waves of pain—no matter where it is, we may prescribe the Macrotys with certainty, (the pain is not throbbing.) A recent case of facial neuralgia was very striking. The gentleman had suffered for some weeks, and had taken various remedies without relief; and I had made three failures myself. Close questioning brought out the character of the pain, and Macrotys gave prompt relief.

I admit that it is very much easier to prescribe from the location of the pain, than from its character, for whilst a patient may be able to locate it correctly, it is not possible for him to describe its character.

If we take the pain of Lobelia, we will find its principal characteristic *anguish*, of which angina pectoris and neuralgia of the heart offer the most common examples. It is that indescribable sensation as if the life was being forcibly riven from the part—anguish expresses it. Lobelia is specific to it. Give twenty to forty drops of a good tincture of the seed to a person suffering from angina, and there is instant relief, which becomes complete in a short time. I have seen one case of uterine neuralgia presenting this character, and from which the patient had suffered beyond conception—a single dose arrested the paroxysm; and its repetition when the symptoms were felt, gave a radical cure. I have seen two cases of abdominal pain presenting this character to some extent, and both were relieved by Lobelia. A singular case of hypochondria, in which the feeling as if a movement of the body would endanger life, but without pain, was cured with Lobelia.

The peculiarity of this pain or sensation is so distinct, that patients may describe it. For many years (indeed it was one of the first things I learned in practice) I have given Lobelia in certain cases of labor where the pains assumed this character. Every one will have recognized the two classes of pain, one of which is well borne, which is really relieved by the action of the will, and the other which finds no such antagonism. In the latter class I find the indication for Lobelia, and it has proven one of the most efficient agents I have ever used in obstetric practice. Of the two agents Ergot and Lobelia, I would take the last a hundred to one.

Let me briefly call attention to the abdominal pain of Nux Vomica.

I say it is any pain having a tendency to point at the umbilicus; it is pretty accurately located. It may be a simple colic, a bilious colic, a derangement of the function of the liver, a wrong of the spleen, a dysmenorrhœa, a disease of the colon, irritation of the bladder—if the pain shows the constant tendency to the umbilicus—I should give Nux. I should fail sometimes, but the failures would be small in proportion to the successes. The definiteness of the symptom, and its easy recognition, are what please me.

The pain indicating Rhus Toxicodendron is very distinctive. Frontal pain, especially involving the orbits, and inclined to be more severe on the left side. Such pain would lead me to prescribe Rhus, if there were no other indications. Add the peculiar appearance of the papillæ at the end of the tongue, and I would have a positive assurance of success. To any pain add *burning* and we would think of Rhus as a possible remedy. Given, the pains of rheumatism with burning, and Rhus is the anti-rheumatic, or is alternated with Macrotys. A case of puerperal fever this Summer in which *burning* sensations and pains were pronounced, was cured with Aconite and Rhus; and arrested so promptly that there could be no mistake in the action of the remedy.

The pain calling for Bryonia, whilst it may be sharp or dull, always has with it a sense of oppression, as if the part were enfeebled, and could not perform its function. Homœopaths speak of burning as characteristic of this pain, but I have not been able to see it. Take a case of pleurisy, or pleuro-pneumonia, or pneumonia, with this sense of oppression and feebleness, as if the part could not and should not do its work, and Bryonia, with the proper sedatives, will prove curative.

In the same way a rheumatism giving the same symptoms of inability, with increased pain following the use, will be cured with Bryonia.

The pain calling for Belladonna is dull, heavy, full, with a sense of functional impairment. It makes but little difference where you find it, or in what disease; whether a simple headache, an ague, "bilious fever," or inflammation of the lungs, Belladonna will prove curative.

The pain calling for Stramonium is constrictive, and when involving muscular structures, is attended with persistent contraction, and of the outlets of the body is expulsive. A case of dysentery, with most violent expulsive movement of the pelvic muscles, was speedily relieved with Stramonium; as was a case of bronchopneumonia, showing as a symptom a most marked and unnatural constriction of the chest.

The pain calling for Gelsemium has as a marked feature exalted sensibility and arterial throbbing. In some cases, especially in the head, the patient dreads movement, and the pulsation of the arteries is distinct and painful. With such pain in any part of the body, we would prescribe Gelsemium with every assurance of success.

The pain calling for Chelidonium is dull, heavy, tense, with occasional twinges, as if the part was being torn. Situated in the hypochondria or epigastrium, Chelidonium is *the* "liver" medicine.

The pain calling for Iodide of Ammonium seems to involve a definite amount of tissue, as in inflammation, and yet points at some particular place which might be covered with the tip of the finger.

In thus calling attention to the symptomatology of

pain in therapeutics, I do not wish to be understood as claiming that it is infallible. Our own senses are sufficiently imperfect, even when trained by long observation. The senses of the patient are untrained and impaired by disease, and his descriptive powers may be very feeble.

NOSOLOGY.

A distinct department which has for its object the classification of diseases, is named nosology, and though we do not propose to make such classification, the subject demands a brief study. In so far as the ordinary classification facilitates study, and the knowledge of disease, it will prove beneficial, but whenever it is made the basis of therapeutics, it must work an injury.

Nosology is said to have three objects of consideration: 1st. The *distinction* and *definition* of particular diseases. 2d. The *nomenclature* of the diseases, or the assignment of the names by which they are to be designated, so that each disease may be distinguished and known by an appropriate name. 3d. The *arrangement* or *classification* of diseases in some methodical and convenient order by which they may be distributed into classes, orders, genera, or species."

We employ this method in natural history, and divide animals and vegetables into "classes, orders, genera, or species;" why should we not employ it in the study of disease? If one will think for a moment the reason will be obvious. The individual, animal, or vegetable, is a distinct, tangible entity; disease is a method of life. When we use this classification, we

think of the object as things, not conditions or states. Thus this method of classifying disease carries to the mind the idea of disease as an entity, a thing that has precise form and condition. This idea has been the foundation of an erroneous practice, and the obstacle to a successful study of medicine.

The reader will understand me to say that so far as therapeutics, or the giving of remedies for disease is concerned, the common nosology is a continued source of error, though in so far as it may facilitate the study of pathology it may answer a good purpose. Used to direct the means of cure, it is wholly insufficient, and many times erroneous. Under single names are grouped the most diverse characters of disease, varying in different persons and at different times.

If disease is an entity, the doctor thinks of his medicine as a policeman who takes that entity by the collar and walks it out of the body. Why not? "Worms" is a disease, then *ascaris lumbricoides*, a variety of this disease—send in *Mucuna Pruriens* to tickle the disease to death and make it "vamose the ranche." Or, we might arrange it as follows: Class—*eccritica*; genus—*malis*; species—*pediculis capitis*; treatment—crack them.

It does look a little funny when we take this view of it, and yet you may say that this is an exceptional case; let us see. Disease *erysipelas*, grows by continuity of structure; treatment—fence it in and keep it from spreading. And so the doctor takes Nitrate of Silver, Tincture of Iodine, or Tincture of Muriate of Iron, and makes his dark line on the outside of the disease, saying, here is an obstruction, I want you to stay on your own side. If the *erysipelas* had been a vicious

animal, he could not have built his fence with a more determined purpose.

If the reader will think for a moment, he will be surprised how strong a hold this idea of disease as an entity has upon the profession, and how it is made to serve as a basis for the most unpleasant medication. The physician forgets the life of the patient in his effort to rid him of his disease—a disease that he has caught, or one that has caught him. He forgets the impairment of life, the functional wrongs; that disease is a condition of life—is life, and that it can not be vomited through the mouth, purged from the bowels, sweated from the skin, passed with the urine, drawn by a lancet from the bloodvessels, killed with mercury or tartar emetic, or so afflicted by the class antiphlogistic that in sheer desperation, it will take itself out of the body.

DISTINCTION AND DEFINITION. — Our authority says that the first object of nosology is “the distinction and definition of *particular diseases*, or of their genera and species.” Here is the common error, of disease as an entity, for which he wishes a distinction and definition. He does not desire a definition of pathological life or groups of unvarying pathological wrongs, but such distinction as will enable him to affix a name.

Neither are we to understand that this “distinction and definition” is to have reference to means of cure, or indeed that they will serve as any guide to remedies. Aitken remarks: “In modern times the great advantages that have arisen from establishing definitions in natural history upon fixed and determinate principle, not only of its various objects individually, but also of the groups under which it was found pos-

sible to arrange them, suggested to medical men the idea that much advantage might also result to the science of medicine from defining diseases, and such groups of diseases as might be found expedient to recognize, under general terms or common names, based upon some fixed and determinate principles." The reader will notice in this quotation the tendency to the error named, and the student finds it impossible to read medicine without getting the idea, that diseases thus classified must be something definite, like the animals and vegetables whose classification is appropriated.

NOMENCLATURE.—The second object of nosology is to name the diseases thus defined, and the medical world has travailed in labor with names, for many years. It is very much as recorded in Genesis: "And out of the ground the Lord God formed every beast of the field, and every fowl of the air, and brought them unto Adam, to see what he would call them; and whatsoever Adam called every living creature, *that was the name thereof.*"

A name should carry to the hearer an accurate idea of the person or thing in its various attributes, and if names of diseases did this we could not object. In so far as names do indicate the wrong of life, names are useful as guides to correct practice. In so far as names direct the mind in pathological inquiry, they will prove of advantage in medical study. But whenever they are recognized as entities, at which remedies are to be hurled, and which must be forced out of the human body, then they will prove a source of error.

Plancquet claimed that "the name of each disease

or species should be so significant that a person slightly acquainted with the language and the subject, should, on hearing it, immediately understand what is the nature of the disease it designates." To such a nomenclature we should not object, and if it should go one step further, that on hearing it we should immediately understand what remedy would rectify the wrong, or cure it, then it would be perfect.

If we take the nomenclature of the Royal College of Physicians, of London, we find 1,146 distinct diseases, and if we would add the named sub-classes or varieties it would bring the number up to near 2,000. A man has one right life, and his varied physiological processes can be studied under one or two score heads, but his wrong life requires a classification under 1,146 heads, or distinct varieties.

If we examine the therapeutics which go with this classification, we find that it numbers but about one hundred remedies in use, and but about twenty in general use, and of these five to ten are in common use for everything. This shows a wonderful discrepancy between the nosology of disease and its therapeutics.

CLASSIFICATION OF DISEASES.—Probably more is gained in the classification of disease than in its nomenclature. The object of classification is to notice the resemblances rather than the differences, to determine the pathological wrongs common to a series of diseases, rather than to determine the special symptomatic differences. With regard to classification, Dr. Aitken remarks :

"It is obvious that any single character, or combination of characters, in respect of which diseases agree

with or differ from each other, may be made the basis of methodical arrangement, under a larger or smaller number of divisions, or of higher or lower genera (language of logicians), or of classes, orders, and genera (language of naturalists). By ingenious devices of the mind the physician or the statist may classify and arrange his knowledge so as to bring it all more readily within his reach for any special purpose—so as to make it, in fact, more at his disposal—to facilitate and pave the way for further investigation. Such are the legitimate objects and the results of all methodical arrangements. Classification, therefore, being only a method of generalization, there are, of course, several classifications of disease which may be used with advantage for special purposes. The physician, the pathologist, the jurist, the hospital statist, the army or navy medical officer, may each legitimately classify diseases from his own point of view, and for his own purposes, in the way that he thinks the best adapted to facilitate his inquiries, and to yield him general results. The medical practitioner may found his main divisions of diseases on their treatment, as medical or surgical; the pathologist, on the nature of the morbid action or product; the anatomist or the physiologist, on the tissues and organs involved; the medical jurist on the suddenness, slowness, violent or unnatural mode of the death; the hospital statist, on the kind of diseases which are treated in its wards; and all of these points of view may give useful and interesting results, (FARR).

“There is thus no question on which more diversified opinions are legitimately entertained than on that of classification. Although it is the aim of all systematic writers and observers to arrange the objects of

study in the most natural order possible, and although diseases are named as if they were individual entities, yet they present so great varieties that they will not admit of that definite and, in many respects, natural species of classification which can be made with objects of natural history. Manifest reasons of convenience and facility for work can therefore be assigned as the great incentive to classification; and numerous reasons exist for classifying diseases in various ways: (1.) Men differ in their estimation of the characters on which different arrangements may be founded. (2.) The facts and phenomena of diseases on which classifications may be made are not all regarded from the same point of view. Most systems are avowedly *artificial*, being arranged with the view to elucidate or support a theory, or otherwise to effect a definite end. For example, by classifying diseases and recording the causes of death, the most valuable information is obtained relative to the health of the people, or of the unwholesomeness and pestilential agencies which surround them. 'We can take this or that disease,' says Dr. Farr, 'and measure not only its destructiveness, but its favorite times of visitation; we can identify its haunts and classify its victims.' We are able to trace diseases also as they perceptibly get weaker and weaker, or otherwise change their type, as some have done from time to time. We know from the valuable returns of the Registrar-General, prepared periodically by Dr. Farr, that certain diseases are decreasing, or growing less and less destructive; that certain other diseases have ceased in some measure; while other severe diseases have exhibited a tendency to increase. The advantages, therefore, of adopting some system of classi-

fying diseases, which can be put to such useful practical purposes, must be obvious to every one."

If one can free the mind from the idea that nosology has a direct relation to therapeutics, these subjects may be studied to advantage. We want to learn the natural history of diseased life as we have learned the natural history of healthy life. If a classification and nomenclature will aid in this, even if only as guide boards and mile posts, we may employ them.

To a certain extent, the common nomenclature of disease is a necessity. It is quite as necessary to be able to name a disease for the satisfaction of friends, as it is to give successful treatment. The name may not probably have anything to do with the management of the case, or the selection of remedies, indeed should have nothing to do with it, yet we are forced to give a name. The first question asked of the physician in the sick room is, "What do you call it?" and we must be able to "call it" correctly according to the commonly received nosology.

If we can simplify our classification, so as to make it a good guide for study, we will do well; if we can make it suggestive of causes of disease which may be avoided, of right attention to hygiene, and an outline of treatment, we will have accomplished all that can be reasonably anticipated. Let us see how far we can make such classification.

The first division will have reference to causes of disease, as well as to pathological conditions. It will be into *epidemic*, *contagious*, *endemic* and *sporadic* diseases. The reader will notice that this is a natural classification, referring to causes of disease and their avoidance, and to a less extent to the conditions of disease and means of cure.

The second division will have reference to the *general* or *local* nature of the morbid states, and as will be noticed occupies the same ground as the preceding, this having reference to the conditions of disease and not to its cause. All disease may be classified under these two heads, though many times it will only have reference to the primary lesion, for as the wrong goes on, a disease which was primarily general becomes localized, and one which was primarily local will cause general disease.

A third division has reference to the structure of parts or to their functional expression, and diseases are divided into *structural* and *functional*. Again, it will be seen that this classification of disease occupies the ground of both the first and second, for all disease must be structural or functional. Here, as before, we find it especially applicable to the primary disease, for one may have commenced as a functional wrong, and grown into a structural disease, as a structural disease may have first existed, but this being cured, other functional lesions persist.

A fourth division might be called physiological, and would have reference to the functions of the body. If, for instance, we make the usual classification in teaching the principles of medicine :

Force.	{	Formative, Heat, Electricity.
Cells.	{	Formative, tissue making. Secreting, does the work of secretion. Necrological, pus cells.
Nutrition.	{	Digestion, Blood making, Tissue making.

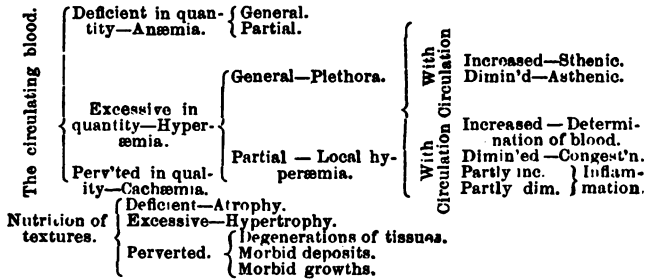
Secretion.	{	Recrementitious, Excrementitious.
Circulation.	{	Arterial, Venous, Capillary.
Innervation.	{	Brain, Spinal cord, Sympathetic.

Taking this classification, and assuming that there is a normal standard of health which may be known, and that disease is a departure from this standard, all lesions may be classified as being in *excess, defect, or perversion*. This classification is used by Dr. C. J. B. Williams in his Principles of Medicine, as in the following tables:

PRIMARY ELEMENTS OF DISEASE.

STRUCTURAL CONSTITUENT.	ITS FUNCTION.	DISEASE.	STRUCTURAL DISEASE
Contractile fiber.	{ Irritability. Tonicity.		
Nervous structure { Tubular (the conductor of nerve force.) Vesicular (the generator and combiner of nerve force.)	{ Sensation. Voluntary motion. Involuntary motion, (excited motor action.) Sympathetic action.		Excessive—Hypertrophy.
Secreting structure.	Secretion.		
Elementary components of blood. { Red corpuscles. White corpuscles. Fibrin. Albumen. Oil, and combustible matters. Inorganic ingredients, (saline and mineral) Water.			Deficient—Atrophy.
Elementary changes in the blood. { By respiration. By secretion. By nutrition. By foreign matter.			Perverted—Degeneration.

PROXIMATE ELEMENTS OF DISEASE.



If now we add to this the ordinary nomenclature of disease, employed in this country, the reader will have before him a brief *resume* of nosology. It will be seen that these various classifications point the way to certain necessary studies, having reference to causes of disease, their general expression, their influence on the functions of life, and lastly the technical language by which they are designated and known.

It will be recollected that diseases are first divisible into *general* and *local*, and the first may be arranged according to the classification of Wunderlich as follows:

General Disease—Dyscrasia.	{	Tabes.
		Chlorosis.
		Scorbutis.
		Dropsy.
		Diabetes.
		Rheumatism.
		Pyæmia.
		Tuberculosis.
		Carcinoma.
Lesions induced by	{	Specific Agents.
		Vegetable Substances.

Of the Digestive Apparatus.	{	Mouth.	Structural.
		Salivary Glands.	
Of the Digestive Apparatus.	{	Tonsils.	Functional.
		Pharynx.	
		Œsophagus.	
		Stomach.	
		Small Intestine.	
		Large Intestine.	
		Liver.	
		Spleen.	
		Pancreas.	
		Peritoneum.	
Of the Urinary Apparatus.	{	Supra-renal Capsules.	Structural.
		Kidneys.	
		Ureters.	
		Bladder.	
		Urethra.	
Of the Reproductive Organs.	{	Scrotum.	Structural.
		Testes.	
		Vesiculae Seminales.	
		Prostate.	
		Penis.	
		Ovaries.	
		Uterus.	
		Vagina.	
		Vulva.	
		Urethra.	
Of the Skin.	{	Cutis Vera.	Structural.
		Rete Mucosum.	
		Epidermis.	
		Sudoriferous Glands.	
		Sebaceous Follicles.	
		Hair.	
Of the Organs of Locomotion.	{	Nails.	Functional.
		Bones.	
		Articulations.	
		Cartilages.	
		Muscular Tissue.	
		Fibrous Tissue.	
Of the Organs of Locomotion.	{	Connective Tissue.	

The reader will notice that whilst this classification is exceedingly simple, it directs attention to the part diseased, the function impaired, and in so far as remedies act on particular parts, it suggests appropriate

remedies. In ordinary professional consultation it proves sufficient, as it does in writing, and it is quite sufficient to satisfy the popular demand for names.

GENERAL CLASSIFICATION

We will make a study of disease according to the four general divisions heretofore named. 1st, with reference to the cause—*epidemic, contagious, endemic, sporadic*; 2d, as it is *general or local*; 3d, as it is structural or functional; and 4th, as it shows a departure from the *physiological* standard. In doing this the special features will be so pointed out, that the reader will be enabled to recognize the divisions, and classify his cases according to them.

It is possible that the description will be at times longer than is really necessary for the purposes of diagnosis, as we wish as far as possible to study the natural history of disease, but it will be made as concise as possible.

EPIDEMICS.

A thorough study of epidemic influences has not yet been made, and we know much less of the subject than we should, yet what we do know has an important bearing upon practical medicine.

Many physicians have recognized the fact, that the conditions of life do change from time to time, and that as the result of this there are variations in the wrongs of life — diseases — and in their expression. That in some years and seasons, these changes were so great as to give that character to disease which is usually known

as epidemic. The fact has been recognized, that this epidemic condition might influence but one disease, or a class of diseases, as those called contagious, those called zymotic, or it might influence all diseases or pathological states.

The general epidemic influence is known by some special character of disease, which is wide-spread, and is noticed in many localities. In some cases it will be seen as a condition of asthenia, in others of undue excitation. In some it partakes of the zymotic character, and this influence upon the blood is noticed in a majority of cases of acute disease. Physicians will recollect it under the name of *typhoid*, giving a peculiar character to fevers and inflammations, and even noticed in minor affections.

This epidemic influence is frequently marked by special symptoms calling for special remedies. Thus the diseases of the Winter of '72-73 were characterized by a peculiar frontal pain, frequently localizing itself in the left orbit; a peculiar appearance of tongue, with prominence and redness of the papillæ of the tip; the tendency to erythematous redness and inflammation of skin and mucous membranes. Epidemic remedy—*Rhus Toxicodendron*. The present year, 1873-74, we notice the common basilar pain, and the impairment of the venous circulation—fullness of veins, a peculiarity of pain, especially of right side, and affection of serous membranes. Epidemic remedies—*Podophyllin*, *Bryonia*. In 1870-71, we noticed especially the deep coloration of mucous membranes, the tendency in severe disease to brown tongue and sordes. Epidemic remedy—*Muriatic Acid*.

To diagnose this epidemic influence, one must be a

reader of the periodical literature of the day, so as to see the expressions of disease in different localities. It is true that observations are made without reference to this, and the reporters do not believe in it, but the evidence is all the more valuable. No one can take a half dozen of our medical periodicals, and compare them for a series of years, without being struck with a certain similarity in the diseases of a year, or a series of years, which can be accounted for in no other way. It would be possible from our periodical literature to tabulate the character of these epidemic influences for a considerable period of time, and this no doubt will be done in the future.

The reader will have no doubt observed, that the diseases of some seasons, no matter how diverse in special characteristics, would have something in common, which something would be especially manifest in the treatment. That in some seasons Quinine would cure everything, in others the sedatives would cure everything, in others a remarkable benefit from Podophyllin, so that when you had once determined a good treatment, you would persist in it for all affections, with very little modification.

And this brings prominently before us the fact, for fact it is, that there is an endemic or epidemic constitution of disease, that should be well studied, and always regarded in treatment. Success or failure will very frequently depend upon this knowledge, and it is something that must be relearned every year.

It was a prominent doctrine of Rademacher and his followers, and he had remedies for three such constitutions. These were *Iron*, *Copper*, and the *Nitrate of Soda*. There was some truth in this, how much I don't

know, for I have not had the opportunity to experiment, and, indeed, have not had time to give his works the examination they should have, as I read German slowly, and they have never been translated.

I believe, however, I have passed through one year, in which Iron was *the* remedy for almost everything, and I think probably some of our old practitioners may recollect it, if they by chance had used Iron. The season commenced in December with a large number of cases of erysipelas, for which Iron was a specific, and for some fourteen months I prescribed Iron daily for almost everything, with the most flattering results. I have experimented with Copper and Nitrate of Soda to but a limited extent.

Rademacher applied the principle to chronic disease. Grauvogl says:

“One experience gained by this school is worthy of special consideration—‘that, in old *chronic* diseases, the previous epidemic constitution always decides, first of all, upon the present indication of a remedy, hence, in every case which comes up for treatment, the time of its first appearance should be learned, as far as possible, for, by this, frequently, if the then epidemic curative remedy is known, the primary seat and the primary kind of the diseased process are known also, and this very remedy will still effect a cure, if a cure is yet possible, or, if the disease is not already succeeded by another disease of the first affected organ or blood, or if disease of another organ has not ensued. But, even in this latter case, that knowledge gives the point of departure for the whole chronic affection.’

“That is in gross, what we see happen on a smaller scale, after strong or oft-repeated doses of long-acting

remedies. First appear symptoms at the point of application, then of its reception in the blood, finally, the affections of the specifically affected organs and systems in succession, and often, at great intervals, as we have observed very distinctly with quicksilver, for instance. The only difference consists in this, that epidemic injurious influences, often after very many years, to the surprise of many, bring to view their *continued operation* as a token of the presence of their results under various forms of disease, while the continued operation of drugs is of proportionally shorter duration."

If this theory of epidemics is borne out by future observation, it must have an important bearing upon therapeutics. If we determine a common element in the diseases of a season, we will have something common in the remedies. If we have an underlying influence of this kind, giving character to disease throughout a considerable extent of country, it is an influence that should be known, and have due weight in our estimate of pathological processes. If we can go still further, and find certain epidemic remedies opposed to this influence, whatever it may be, it will greatly aid our treatment.

I am not only satisfied that we have these epidemic constitutions of disease, but that we have epidemic remedies as well. And going further than this, I believe with Rademacher, that this epidemic influence persists in chronic disease, and that the knowledge of the epidemic influence at the time the disease commenced, may give us in the epidemic remedy of that year, the means of cure.

We need not re-discuss the change of type theory,

and yet I have no doubt but that disease does change its type; that for a number of years it has the character of asthenia, and for another period it will be sthenic. The knowledge of this will be available in the selection of remedies.

Again we find years in which the peculiar wrongs known as typhoid are prominent. All acute diseases seem to partake of this character, and if of considerable duration, typhoid symptoms will be developed. We have "typhoid pneumonia," "typhoid dysentery," intermittents and remittents run into typhoid, as well as other diseases. This epidemic influence is readily recognized, and suggests treatment.

Zymotic diseases are not unfrequently epidemic, or have underlying them the epidemic character. It is true they frequently produce a specific contagion, which serves as a cause of their propagation, and this we wish to keep distinct from the character we are now studying. The epidemic influence is that which renders the community very susceptible to the contagious poison, or gives it specific characters, or renders it more destructive to life.

Readers will readily recall epidemics of this character. Seasons in which smallpox, scarlet fever, measles, whooping cough, were remarkably prevalent, easily transmitted, difficult to protect against, possessed distinctive features, and required special treatment. And they will likewise recall the fact, that in these years other diseases would show similar peculiarities, and would require similar remedies. This will have been noticed in local complications, as well as in the general features. That in some years there was a remarkable tendency to disease of the respiratory apparatus, or of

the bowels, or of the kidneys, or of the nerve centres, and that these local affections were to be met with as complications of all diseases.

I have already noticed the fact that such epidemic influences may be discovered in chronic diseases; that many times the disease will partake to a greater or less extent, of the epidemic constitution of the year in which it was contracted, and will require the epidemic remedies of that year in its treatment. Indeed, in some cases, we find that determining this, and knowing the constitution of disease at the time it commenced, and the remedies that were curative then, we have determined the remedies which will prove curative.

It is not only important to thus be constantly on the alert to determine the presence of epidemic influences, and carefully note the expressions of disease at such times, but it is well to keep memoranda for future use. It is true that all disease has distinct and definite expression, and that for this we may find distinct and definite remedies; quite as much for this epidemic constitution of disease as any other.

We are acquainted with quite a number of epidemic remedies, and find the list continuously enlarging. So marked is the influence, and so distinct the features, that we sometimes find a single remedy sufficient for the entirety of disease. It is possible that we may make the best study of remedies in such seasons, for I have noticed that if a remedy has thus proved markedly curative at such times, the epidemic symptoms indicating it being pronounced, the remedy would prove curative in sporadic, endemic, or contagious diseases, wherever the special symptoms were present.

The remedies worthy of special notice in this con-

nection are Quinine, Muriatic Acid, Soda, the Antiseptics, Sulphurous Acid and Sulphite of Soda, Chlorate of Potash, Baptisia, Aconite, Veratrum, Belladonna, Gelseminum, Rhus Toxicodendron, Iron, Nitric Acid, Podophyllum, Lobelia, Bryonia, Nux Vomica.

All of these, and such others as may have attracted the attention of the reader as being especially useful in certain years, may be advantageously studied in this connection.

CONTAGIOUS DISEASES.

In this classification we find that certain diseases are produced by a specific cause, generated during the progress of the disease, and propagated from person to person. In them we find that the contagious element is continuously reproduced in kind, and the expressions of disease are alike. As before noticed, it may and does vary from epidemic influences, and as we will hereafter see, from endemic influences, but in general features there will be a remarkable likeness, and in therapeutics there will be something in common.

The diseases grouped under this head are the eruptive fevers—variola, rubeola, scarlatina, varicella; the contagious cough—pertussis—whooping cough; some zymotic diseases—erysipelas, puerperal fever, diphtheria, spotted fever, cerebro-spinal meningitis; some fevers and inflammations, cholera, typhoid, typhus and yellow fevers, inflammations with typhoid symptoms.

The general diagnostic feature is that the disease can be traced from person to person, and when the fact of exposure is known, we are justified in giving it the

care, and using the precautions against the spread of contagion that may be necessary.

These diseases have certain distinct expressions by which they may be known, and when we have a first case, the contagious element will receive due consideration, especially in guarding against its communication to others, in some cases by the use of appropriate prophylactic means. We also regard the fact, that the contagion generated during the progress of the disease may unpleasantly influence the patient, indeed his life may be destroyed by its presence with and around him.

VARIOLA.—The diagnosis of smallpox will be made by—*a*, the intense, aching pain in all parts of the body, deep seated, during the first day of febrile reaction; *b*, the appearance of the eruption, as distinct red spots, which give to the touch the sensation of hardness like a shot under the skin; *c*, the regular development of the pustules in a period of nine days; and *d*, the flattened and umbilicated form of the pustules.

It suggests protection by vaccination, by avoidance of the cause, by the use of proper antiseptics. In the treatment of the disease, that the contagion be removed, as far as possible, by the excretory organs, and at length by the completed stages of the eruption. When the contagious virus is in large quantity, as shown by the usual evidences of decomposing animal matter, it suggests the use of antiseptics, agents that destroy the material of contagion, great cleanliness, and a sustaining treatment.

RUBEOLA.—The diagnosis of measles will be made by—*a*, the catarrhal symptoms, full, suffused and injected eyes, which announce the attack; *b*, the pecu-

liar and constant cough ; and *c*, the irregular form of the eruption.

It suggests Lobelia and Asclepias to favor the determination of the eruption upon the skin, and relief of irritation of mucous membranes, and Drosera as the special remedy for the cough.

SCARLATINA.—The diagnosis of scarlet fever will be made by—*a*, the early appearance of a sore throat, which persists and is a marked feature of the disease ; *b*, the high range of temperature, and dryness of surface ; *c*, the vivid scarlet redness of the eruption ; and *d*, the evident impairment of the cutaneous capillaries, as marked by the persistent white line left as the finger is drawn over the surface.

It suggests Belladonna in minute doses as a prophylactic, Belladonna and Carbonate of Ammonia as stimulants to the capillary circulation of the skin. And the use of fatty inunction alone, or with stimulants—Creosote and Common Salt.

VARICELLA.—The diagnosis of chicken pox will be made by—*a*, the irregular appearance of the points of eruption ; *b*, their speedy development ; and *c*, their vesicular form.

PERTUSSIS.—The diagnosis of whooping cough will be made by—*a*, the occurrence of cough without febrile symptoms ; *b*, its paroxysmal and spasmodic character ; and *c*, the whoop, the sibilant or whistling sound as the air is forcibly drawn through the contracted larynx during or at the close of the paroxysm.

It suggests specific remedies, Drosera, Belladonna,

Nitric Acid, and *Trifolium Pratense*, as may be indicated in each case by special symptoms.

ZYMOTIC DISEASE. — Whilst all contagions may be classed as zymotic, all zymotic diseases are not contagious. Those named—*erysipelas*, diphtheria, spotted fever, and cerebro-spinal meningitis—may be epidemic, endemic, or contagious, and we study them in each of these classes. When they prove contagious, it may be from either of two conditions—the intensity of the diseased action, or the loss of life and breaking down of the tissues.

If we take the first disease, *erysipelas*, we will find that it sometimes develops remarkable virulence in this direction; so much so that it will attack almost every surgical case in a hospital, and will be contracted by nurses and others. This of course will be noticed especially in certain years (epidemic influence) and in certain localities (endemic influence), but we can not neglect to notice the contagious element.

In the one case we notice the *intensity* of disease, both as to its local and general symptoms. The part is intensely hot, burning, painful, and is dry and tense, and its color, whether bright or dark, is vivid. The pulse is frequent, tense, and unyielding, the temperature has a high range, and the nervous system shows great excitation. Whenever such symptoms show themselves, we may fear contagion, and will employ means to prevent the infection of others.

In the second case we have the evidences of sepsis and deliquescence of tissue. Locally the part is full, and wants elasticity, the epidermis yields, and presently the connective tissue. The discharge becomes offen-

sive, the pulse oppressed and feeble, and the tissues at large softened.

Whilst in the first case remedies would have reference to the intensity of diseased action, and consist principally of the five specifics—Iron, Veratrum, Rhus, Apis, Belladonna; in the second it will consist in the use of the proper antiseptics, with restoratives and food.

In the second, *puerperal fever*, we notice the same two elements of contagion, quite as marked as in erysipelas. But there is added a third, an infectious material thrown off from the reproductive organs. So marked and virulent is this, that it is readily communicated by the physician from patient to patient, even through an interval of days or weeks. It is not only thus infectious, but is intensely poisonous to the patient, and its re-absorption intensifies disease, and frequently leads to a fatal result.

Having regard to the means named in erysipelas, the physician gives especial attention to prevent the spread of contagion. In some cases this may be avoided by strict attention to cleanliness, change of clothing, and the use of antiseptics, as washing with a solution of Chlorate of Potash, Sulphite of Soda, Labarraque's Solution, or dilute Sulphurous Acid. To prevent re-absorption, we use great cleanliness, and the antiseptics just named.

In *diphtheria* the contagious property seems to be developed more by the intensity of disease, than by devitalization of tissue and putrescence, and it is always well to use extra precautions when the febrile action and local inflammation are intense. But here as in *puerperal fever* a specific infection is generated at

the point of local disease, and is readily communicable to others. This is so marked that the diphtheritic deposit is readily inoculable, not only in the throat, but on almost every abraded surface.

The knowledge of these facts will not only cause us to guard against the general conditions of contagion, as in the other cases, but especially against the transmission of the local infection by coming in immediate contact with the patient and inhaling the breath, the use of towels, handkerchiefs, before they have been thoroughly purified by boiling, and especially the use of probangs, swabs, or surgical instruments that have been employed on a diphtheritic patient.

In *cerebro-spinal meningitis* and *spotted fever* we have the double element of contagion first named. The generation of the infectious material by intensity of disease, and by loss of life in tissues, and putrescency. The same means will be employed as in the case of erysipelas, both to prevent the spread of contagion, and to protect the patient against the poison generated in his own body.

CHOLERA.—Asiatic cholera might be studied in the class of epidemic diseases, as in the seasons of its prevalence there is a marked epidemic influence, that shows itself in other diseases as well as this. But though we recognize this, the evidence that it is propagated by a specific contagion is too well proven to allow us to neglect it. Cholera advances on lines of travel, and renews its strength as it goes, going with people, being propagated by and in people. Gaining strength and virulence by special combination of circumstances in its native country India, it takes passage by steamship

to Europe, from Europe to America, where it is distributed by railroad, steamboat and stage

It is probable that the infectious poison is found principally in the excretions, and mainly in the dejections from the bowels, and the disease is especially propagated from them. If so, it points the physician to the necessity of especial care in the removal of the dejections, and that they be so disposed of as not to endanger others, either by their exhalations, or by contaminating the water supply.

We diagnose an attack of cholera by—*a*, the great exhaustion that attends the first discharges; *b*, by the evidences of imperfect circulation and aeration of the blood, as seen in the bluish discoloration of the extremities; *c*, by the want of color in the fæces, “rice water”; *d*, by the marked enfeeblement of the circulation, and lowered temperature; and *e*, by the excessive thirst, nausea and vomiting, and muscular cramps.

TYPHOID FEVER and acute diseases assuming *typhoid symptoms*, usually possess the contagious element in slight degree. Yet in some cases we observe a remarkable development of this character which demands the attention of the physician. Typhoid is generally thought to mean asthenia, but it is better to think of it as having reference to sepsis of the blood. With the condition of sepsis, comes the property of contagion, and under some circumstances this becomes marked. I think diseases called typhoid will be found to develop the character of contagion both from intensity of disease, and from impairment of the life of tissue and putrescence. The most marked cases I have known were when there was great nervous excitation, tense

tissues, high temperature, and the sensation of pungent heat when the hand was applied to the surface. The other cases are distinguished by a peculiar sweetish cadaveric odor of breath, dark fetid fæces, and fetor of urine.

TYPHUS FEVER is markedly contagious, and may be wholly propagated by a specific contagion generated during the progress of the disease, and thrown off in the excretions both from bowels, kidneys, skin and lungs. It has been noticed that here intensity of disease, marked by great febrile excitement, was more likely to develop the contagious element, than the condition commonly known as putrescence.

YELLOW FEVER is undoubtedly contagious in degree, sometimes very markedly, and at others so as to exert but little influence. Both conditions of contagion have been noticed: that from great intensity of disease, with the symptoms heretofore named, and from putrescency appearing in the last stage with the black vomit.

ENDEMIC DISEASES.

If disease showing distinct peculiarities is confined to a locality, it is said to be endemic, especially if it prevails to any considerable extent. In such cases the cause is evidently local, and it is evident that many times it may be discovered, removed, or avoided.

These diseases have a definite and distinctive expression, which should and may suggest the means of cure. In some the endemic influence is so wholly the cause, and the endemic expression so clearly indicates the

lesion, that remedies will be remarkable for their curative influence. At other times the endemic influence, and disease produced, will be but a part of the wrong, and whilst the endemic remedies are important, they are not so certain as before, and have to be aided by other means.

The diagnosis of endemic disease is usually very clear: *a*, There is something distinct and special in the expression of disease; *b*, there are a number of cases, showing these special features; *c*, the diseases are restricted to definite localities.

First among the diseases included in this classification are all those showing *periodicity*, including intermittent, remittent, and yellow fevers. Following these, we find that an endemic influence may give rise to the series of continued fevers, to all inflammations, and to many functional and structural diseases. And it is to be noticed that as a rule the endemic influence intensifies the natural disease in addition to giving it special features.

PERIODICITY.—Whatever may be the cause of periodicity in disease, the fact is sufficiently tangible, easily recognized by the periodic expression, which indicates a special pathological condition, and calls for a special group of remedies, anti-periodics—Quinine. As before remarked, the periodic element may serve as a basis of nearly every named disease, which will be cured by the one remedy, Quinine. Or it may only be a complication, or part of the disease, and Quinine will only be one of the remedies called for. But periodicity does not always mean Quinine, and it is sometimes difficult to determine whether it does or not. All diseases are

periodic to a certain extent, having periods of increase and diminution, as may be noticed even in the fevers called continued. Indeed all the functions of life, both in health and disease, have something of periodicity in their performance.

The diagnosis of periodicity will be made by—*a*, The marked remission or intermission of the evidence of disease, and return to the healthy standard of life; *b*, the equally marked exacerbation of disease, especially with reference to the wrongs of innervation, temperature and circulation; *c*, the disposition to continue such functional aberrations without change of structure; and *d*, the fact that such disease is endemic in the locality.

INTERMITTENT FEVER.—We diagnose an ague by—*a*, the marked cold stage; *b*, followed by a hot stage; *c*, a sweating stage—all occupying a comparatively short time, usually less than twenty-four hours; and *d*, a more or less complete intermission of the disease, and return of normal functional activity.

If the intermission is complete, with normal temperature, normal circulation, innervation and secretion. Quinine will be the remedy. If functional wrongs should persist during the intermission, appropriate means should be employed for their removal, and the Quinine given if the disease persists.

REMITTENT FEVER.—We diagnose remittent fever by—*a*, A forming stage which may be brief or of one or two weeks duration, and which is frequently attended by gastric disturbance, and frontal pain; *b*, a chill, not nearly so intense as in ague, but well marked; and *c*, a hot stage which is distinctly broken up into remissions

and exacerbations, and continues to the sweating stage, which is the termination of the disease.

The distinct remissions and exacerbations—periodicity—means Quinine, and in some cases this remedy will be sufficient to arrest the entire series of morbid processes. This condition will be known by—*a*, The soft and open pulse; *b*, the moist and cleaning tongue; *c*, the soft and moist skin; and *d*, return of normal innervation—at the remissions. If these conditions do not present, we determine the character of the wrongs and employ the means necessary to remove them.

YELLOW FEVER.—Though there is undoubtedly an epidemic influence in some seasons, and the disease is more or less contagious, we find that the endemic conditions are of great importance. Yellow fever can not prevail in unfavorable situations, (it is said never to prevail at altitudes of more than four hundred feet above the ocean), and just in proportion as the local influences favor it, the disease will be severe and fatal. Bad drainage and want of cleanliness are especially noted as likely to favor the propagation of yellow fever.

The diagnosis of yellow fever is made by—*a*, The marked chill, attended by lumbar and frontal pain, nausea and vomiting; *b*, the rapid accession of the hot stage which is very intense, lasting from twenty-four to seventy-two hours; *c*, the abatement of febrile action, but with marked prostration, and gradually increasing yellowness of skin; and *d*, the return of nausea and vomiting—the black vomit.

TYPHOID—Next to periodicity the most frequent and marked endemic influence is that which gives the

typhoid character to fever. It may produce typhoid fever with disease of Peyer's glands, may cause typhoid symptoms in remittent fever, and all the inflammations. A very common manifestation of the influence is in typhoid dysentery, and typhoid pneumonia. The local cause is evidently decomposition of vegetable and animal matter, the products being thrown off into the air and inhaled, absorbed by food, or infecting the water supply. As it is possible to remove such causes, the physician should always direct attention to them in these cases, that they may be removed.

Using the word typhoid as an adjective to designate a condition of disease, it has reference to the condition of sepsis and putrefaction. The enfeeblement or asthenia is but an incident, and is sometimes not noticed until a late stage, though the typhoid symptoms are marked.

The diagnosis is best made by examining the exudations or secretions. It is especially marked in the mouth; on the tongue by *dirty* coating, or a fur that assumes a brownish tinge and gradually becomes deeper until it is almost black; dirty or dark sordes upon the teeth; unpleasant, dark, and offensive fæces; urine that is frothy, and gives an unpleasant cadaveric odor. We also notice it in the sense of pungent heat when the hand is applied to the surface, and in the low delirium. In surgical diseases, the discharge from wounds or injuries, or operations, will show it, in a wrong of the pus, which becomes thin, ichorous, fetid, and in a tendency to softening of tissues and sloughing.

It suggests the class of antiseptics, especially Sulphite of Soda, Sulphurous Acid, Muriatic Acid, Chlorate of Potash, and Baptisia, which are selected according to special indications hereafter named.

We also find special expressions of disease, when endemic, that indicate special remedies, and these prove curative. As in the case of epidemic influence, we find that these symptoms are common to many or nearly all the diseases of the season or year, and the remedy indicated assumes a very prominent place in treatment. Thus all the remedies named as being indicated in epidemics, are found indicated when the cause is endemic.

Thus we sometimes find an erysipelas, puerperal fever, or dysentery, that is clearly endemic, and the special indications for remedies will be distinct. We want Iron, Veratrum, Rhus, Podophyllin, etc., and the indications are so direct and positive that a cure is certain and speedy.

SPORADIC DISEASE.

In this last class we find no special expression of disease, or in other words, we find the regular succession of symptoms as given by authorities. The causes are in the acts or indiscretions of the individual, in exposure to heat, cold, wet; want of proper clothing or protection; intemperance in eating and drinking; over-exertion, physical or mental—and the reverse, a want of exercise. Or the cause may be found in the general conditions of life; sudden changes of temperature; more or less moisture in the atmosphere; and a greater or less electrical condition.

These causes are temporary, and avoidable, and it is well to study them in relation to disease. Whilst a man may not escape an epidemic, contagious, or endemic

cause, right living will usually prevent the class of diseases called sporadic.

It is also well to notice that these diseases are usually simple in their structure, and very amenable to remedies. If we take the physiological study of disease, and determine which is the *first* wrong of function, and right it, we will have but little trouble in treatment. A sporadic fever yields readily to the special sedatives—agents that rectify the wrongs of the circulation ; or at farthest will need but the help of those which increase secretion. An inflammation readily yields to the general sedatives, and those which remove the irritation of the part. The important points to determine in these cases are—the character of the general disease, and the remedies which will right it ; the situation and character of the local disease, and the remedies that will influence the part, and influence it in a right direction.

GENERAL AND LOCAL DISEASE.

This would seem to be a very simple and profitable classification, both in determining the character and gravity of disease, and in selecting remedies. Yet when we come to the bedside we find it very difficult to make the diagnosis. Disease may be so uniformly distributed, that it is impossible to say that one part suffers more than another, or it may be so localized and restricted to a part, that its general influence is hardly noticed. Yet in most cases we will find the two associated together. It is difficult to find a person so uniformly constructed that there is not some weaker part, and in disease which otherwise would be general,

this weaker part suffers. If it were not so, the happy man would be like Dr. Holmes' "one horse shay," and like it would fall to pieces at once, somewhere between three-score and ten and five-score years. And there is no part so disconnected with the organism as a whole, that can suffer disease without influencing the body at large.

Though the body, so varied in function, is one, yet it is of advantage to think of disease as being general and local (in principal part), and associate with these ideas thoughts of general and local remedies. To get a fair conception of the elements of general disease it is well to think of those functions which are common to the entire man, or which are equally necessary in their results to the entire man. And to get a fair conception of local disease, we study the function of each part, in so far as it can be dis severed from the life in its totality.

We might make a group of the elements of general disease, according to our physiological classification, somewhat as follows :

Force.	{	Formative—for organization.
	{	Heat.
	{	Electricity.
	{	Conditions of life and motion.
The Blood.	{	In its circulation.
	{	{ Increased,
	{	{ Diminished,
	{	{ Wrong in kind.
The Blood.	{	In its organization.
	{	{ with reference to nutrition, to degenera-
	{	{ tions, deposits and growths.
	{	Influenced by
The Blood.	{	{ Retained excreta.
	{	{ Malaria.
	{	{ Zymotic poisons
	{	{ Specific poisons.
The Respiratory Function.	{	{ For the supply of Oxygen.
	{	{ For the removal of Carbonic Acid.
	{	{ As an aid to the circulation.
Innervation.	{	{ From the sympathetic, co-ordinating the vegetative process.
	{	{ From the spinal cord, as influencing the automatic functions.
	{	{ From the Brain,
	{	{ Reason.
	{	{ Emotion.
	{	{ Volition.
	{	{ Sensation.

It is not necessary to consider each of these in this place, but having them grouped before the eye, the mind can analyze each one as a factor of disease, and combine them in natural groups, as usually seen. The mind not only recognizes them as general elements of disease, but will soon learn to recognize the common expressions of wrong, according to the classification of *excess, defect and perversion*. And it will soon go further than this, recognizing remedies which reach each individual element, and do that necessary to be done—opposing the morbid action and influencing the function toward the normal standard. If there is an excess—above, the influence is to bring *down* to the standard of health. If there is a defect—below, the influence is to elevate or bring *up* to the normal standard. And if there is a perversion—a departure from, the influence is to bring *back* to the normal standard.

We have already noticed that none of these elements of general disease can exist without producing more or less of local disease, and we may also say without influencing the entire series named. With reference to local disease we find it severe and destructive in proportion to the severity of the general lesions. So too we find that the influence of some of these elements of disease sets up a series of lesions which are severe in proportion to the severity of the original one. In both cases general remedies are most important, and in so far as they rectify wrongs, and restore normal structure and function, they are most important.

In some cases the general lesion determines the character of the local one. This is especially the case when the general lesion is of the blood, giving caco-plastic or aplastic deposits. An inflammation may

spring up, simple in its character, from the common causes, and if there had been no wrong of the blood, it would have readily passed away by resolution. Yet, there being cacoplastic material in the blood, this is thrown out as an exudation, and breaking down, causes most serious destruction of tissue. If in such cases as this the character of the general lesion were recognized early, and proper means employed to remove the imperfect material by way of the excretory organs, and so improve digestion and blood making as to prevent its renewal, the local lesion would be less severe and destructive. In place of a "white swelling," or "*morbis coxarius*," the inflammation would run its regular course of six to nine days to resolution.

If we take the case of *phthisis pulmonalis*, we find another good example. Say there was an original want of *formative force*, and in consequence there is continuously produced an imperfect material in the blood. Its deposit in the lungs comes whenever from any cause excretion is arrested, preventing its normal removal, and when an irritation of and determination of blood to the lungs is set up—the material being carried to the lungs and there excreted. In this case a rational practice of medicine looks first to an increase of formative force, getting thereby a better blood, better tissues, and a stronger life. When the disease has once developed itself, the treatment will of course look to the establishment of the processes of combustion and excretion—removing the material from the blood in this way—and the arrest of irritation of the lungs, which is the cause of the deposit there.

If we take the single factor, *heat*, as the example, we find the very same state of affairs. If, for instance, we

have the lesion of the blood known as "typhoid," we find that its increase is in proportion to the wrong of the temperature. If we have an inflammation of the lungs, the local disease is destructive in proportion to the increase of temperature. If we have a phthisis pulmonalis, the deposit is rapid in proportion as the temperature is high, and the destruction of lung tissue is in the same ratio. We say, therefore, that diagnosis by the body thermometer, must suggest a class of general remedies, which will prove efficient in modifying and arresting general and local disease.

There is no doubt but that lesions of excess and defect of electricity, as a condition of life, and as a force, have a similar influence upon disease. *Plus* electricity, and we have increased disease by excitation; *minus* electricity, and we have increased disease by want of excitation. The diagnosis will be formed in most cases by the degree of excitation as manifested by expression, and the proper remedies will suggest themselves to relieve the body of its superabundance, or to employ means which will add to, or prevent its waste.

When we study the circulation of the blood as a factor in disease, we see how marked the influence of one of these general wrongs. Given a lesion of frequency in movement only, and we find that any morbid process is increased in proportion. Secretion is arrested, the appetite is lost, blood making and nutrition are impaired, waste is interfered with, and every cause of disease intensified. Wrongs in the circulation other than frequency, give the same results. Even an unequal circulation of the blood may lead to such serious impairments of function, as to be a cause of death. Evidently the diagnosis of these general

wrongs, and the use of remedies to reach them, are of prime importance.

When we study the influence of lesions of the circulation upon local disease, we find them playing the same important role. If you have a local disease, inflammatory or otherwise, it will be to a considerable extent severe and destructive in proportion to the lesion of the circulation. If we have an inflammation of the lungs, it will be severe in proportion to the frequency and wrong in the circulation. With a pulse of 100 beats per minute, and free, there is little danger; but with a pulse of 130, small and sharp, there is most serious danger. If in such case, the lesion of the circulation can be removed, the local disease will be modified in the same proportion.

Continuing on with this classification, attention might be called to the next group—the blood influenced by certain causes of disease. Take first retained excreta, and we have a most excellent example of the need of diagnosis by this classification. We are treating an injury, a wound for instance, and everything progresses well, until from some cause one or more secretions are arrested. At once we see a change in the local disease, the part suffers, its temperature rises, becomes painful, the process of repair stops, the exudation is changed in character, the pus is unpleasant, and finally the repair accomplished is broken down, and it may be the part sloughs. Surely it is well to be able to recognize this wrong, and bring such means to bear as will re-establish waste and excretion.

Or a person from some common cause may have a simple fever. At first there are no unfavorable symptoms, and we reasonably expect a speedy convales-

cence, but from some cause there is arrest of secretion, which is retained in the blood. All the febrile symptoms are increased, and in addition we notice in the brown tongue, sordes, etc., the evidence of sepsis of the blood. Here it is well to recognize the importance of this general element of disease, and by early recognition prevent the unpleasant consequences named.

Malaria has played a most important part in disease and the reader will at once recognize its importance. Given a case of disease, most simple in form, seemingly, and with this element characterized by periodicity, the disease may go on from bad to worse, until possibly, death results. It does not make much difference whether it is a fever, an inflammation, or some other disease. If we take inflammation of the lungs, the recognition or non-recognition of this element of disease (periodicity), may be that upon which the life of the patient depends. Without remedies directed to this special element, the disease goes on to destruction of the lung tissue. With Quinine properly administered, it runs a brief course, and terminates in resolution.

The influence of zymosis is well illustrated by erysipelas. You notice the swollen, red, and glistening spot on the skin, and as the patient complains of the peculiar burning, you call it erysipelas. If your attention is not called to the element, zymosis, by the peculiar tongue, pulse, condition of innervation, etc., and you prescribe empirically at a local inflammation, you may lose your patient. Recognizing the zymotic character of the disease, and uniting it with proper remedies for this, the patient gets along well.

Dysentery is another excellent example of this. In the minor sporadic cases, Podophyllin to catharsis,

White Liquid Physic, or Castor Oil and Turpentine, may serve the purpose, and the sufferer gets well after a time. But do not trust zymotic dysentery to this treatment. Here the wrong of the blood, working typhoid symptoms, is the principal factor of the disease and the element of danger. It is to be met by specific epidemic remedies, or those which we class as anti-zymotic or antiseptic.

The influence of specific poisons well illustrates the truth of what has just been said, though the illustration is outside of ordinary practice. The hunter in the Carolina mountains feels something prick his leg, and getting through the brush he pulls up his pants, and finds but a slight wound, and the smarting has already ceased. It amounts to but little as a wound, but if he has heard the rattle of a serpent, or has seen it in the act of striking him, he is at once awake to danger. He has made specific diagnosis, and by sucking the wound, the use of Ammonia, or the free use of Whisky, he provides against the specific poison.

We get a practical example of these lesions in the case of syphilis. A man finds a small sore on his penis, which as yet has given him no annoyance, and if he had no experience with such things, he would expect it to disappear as rapidly as it came. But as days go by, it gets larger, and seems more prominent, and after a time comes skin disease, sore throat, falling of the hair, iritis, nodes, etc. Surely there is something more than a simple abrasion here—from a strain. Supposing the physician should only recognize it as a sore, ignoring the specific poison of syphilis, what would be the success of treatment? And yet he could do this with quite as much credit, as to fail in recognizing the

specific wrongs in zymotic dysentery, in typhoid fever, in smallpox, in scarlet fever, or in measles.

If we study the function of respiration in its influence upon processes of disease, we reach the same results. With wrong respiration, every other wrong is intensified; with right respiration, ameliorated. There is such a thing as too much oxygen, and consequently increased burning and excitement, just as there is such a thing as blood loaded with carbonic acid gas, and so burdened that the varied functions of the body can not be properly performed. Surely it is worth our while to endeavor to diagnose these conditions, and to employ remedies which directly reach the wrongs and remove them.

When we study the lesions of innervation, we are impressed with their influence upon all parts of the body, and the necessity of directing the mind to them in all forms of disease for the purpose of diagnosis. Whether our senses will detect a lesion, frequently depends upon our method of thinking. If the mind directs the necessary examination, the evidences of disease may be quite clear, when otherwise they would scarcely be noticed, and would not make the necessary impression.

If we study thoroughly the physiology of the *sympathetic* nervous system, and get correct ideas of its controlling influence over all the functions of vegetative life, we will always direct our observation to those expressions of disease which give information with regard to this. Remedies influencing disease through the sympathetic are among our most important therapeutic agents, and fortunately the expressions of disease are quite clear. If we commence with the lesions of

the circulation—frequency of pulse, change in its character—lesions of temperature, change in the condition of the skin, some changes in muscular expression, change in the respiratory function, we will find a group of symptoms that are distinct and expressive, and so closely associated with individual remedies, that the remedy is at once suggested by the symptoms.

The influence of lesions of *spinal innervation* is well shown in many cases of chronic disease, where “spinal irritation” is a complication. A disease of the digestive or urinary apparatus may seem quite clear and simple—one that remedies will readily reach, and yet when we prescribe them, there is continued failure. We have failed to recognize a “spinal irritation,” but from this wrong of innervation, the local disease is continuously kept up. If the special wrong is diagnosed, and proper means used for its relief, the remedies which had before failed with the local disease, are more speedily successful.

We get another good example of this in some cases of continued fever, and other low forms of disease. A patient is doing well enough, other than he can not sleep from difficulty of respiration. When awake the respiratory function is carried on by the influence of the will, but when this is in abeyance, the automatic function of the spinal cord is not sufficient. Unless this wrong is recognized, and means employed to rectify the wrong of spinal innervation, the patient will probably die. We may get evidence of similar wrong, in one case in retention of urine, in another case in incontinence, in a third in convulsions or muscular wrongs, and in all we are impressed with the importance of remedies that influence the spinal cord, and influence

it in the direction of health. It would be most absurd to omit from our diagnosis the evidence of a convulsive tendency, and it would be quite as absurd to omit to look after and recognize any evidence of spinal lesion.

When we study the functions of the brain, we find them exerting similar influences over the body at large, both in health and disease. It will not do to undervalue a right action of the mind, as an element in the recovery of the sick, as it will not do to undervalue a wrong action of the mind in perpetuating disease. Given a mind at ease and restful, and a patient may recover from disease or injury, which under other circumstances would most certainly be fatal. So true is this that we are always on the watch for symptoms shadowing forth the condition of the brain. The querulous voice, the hopeless voice and expression, the unstable voice, the tone of excitation, the tone of prostration, all convey valuable information, which must not be neglected.

We find cases in which an emotional wrong may originate or so intensify processes of disease as to endanger life. A very familiar example of this is found in nostalgia, or "home-sickness." In the late war, it was found that this so influenced disease in the hospitals, at times, as to double the mortality; indeed, many times a furlough to go home was the only reprieve from death. In the recent Franco-German war, many cases were noticed. Fernand Papillon writes: "During the last war nostalgia carried off many sufferers among our unhappy prisoners dispersed throughout Germany. It attacked the soldiers and *mobiles* during the siege of Paris, especially toward the close of it, when privations and successive defeats began to reduce the most robust

organizations." I have seen just such cases in private practice, and the hope and promise of a return to home, was the strongest remedy toward recovery.

"Hope is an anchor" for many wearied and suffering souls, binding them to this world, lightening their suffering, and giving increased strength for recovery. The want of hope is one of the most serious things we have to contend with in disease. To give hope to the sick, is one of the many duties of the physician.

It is possible that some may give little credence to the statements regarding the influence of the emotions in disease. And yet every one practicing medicine for some years will have seen the influence of love, fear, anger, grief, etc., so clearly manifested, that there can be no mistake in the matter. I have seen grief so profound, that every function of life was seriously impaired, and unless the current of thought could be changed, there was danger to reason or life. A free outburst of tears might give relief to the overburdened heart (brain.)

Every physician in active practice has realized the influence of the will upon disease, and every one will wish to know the condition of this function, in serious or protracted disease. The evidence of a strong will, and intention to get well, is a real encouragement to the physician, as the want of will in this direction is a great discouragement. If we recognize a want of volition in severe or protracted disease, we do all we can to call it out and strengthen it, and in so far as we do this our patient is benefited. Even in the treatment of a cough we find this is important. If the patient can be impressed with the importance of controlling the cough by the will, we will find it much easier to check it.

Physicians are always awake to wrongs of sensation, though frequently the only idea that follows is, the use of means to obtund the sensibility of the brain. It is true that unpleasant sensations or pain intensify processes of disease, and wrong the entire body by depriving it of necessary rest, yet many times far less harm comes from this than we would suppose. Indeed, in the larger number of cases it is better that the patients suffer pain, than that they be relieved by the ordinary narcotics. If by the study of pain we can select a remedy for disease, then it becomes a valuable evidence. A remedy in this case looks not so much to the removal of the pain, as to the arrest of the disease of which pain is a symptom.

The study of *local disease* becomes important in that it directs the mind to limited parts and functions, and thus specializes the wrong. We group the most important functions of the body, as of digestion, circulation, respiration, excretion, etc., and then study each particular organ or part. If we take digestion, we study the function in the mouth, the stomach, the large and small intestine, and as influenced by liver, pancreas, etc. If a certain group of organs or parts do a particular work, we will find diseases of it announced by wrongs of that work. Thus the wrongs of function point us to the locality of the lesion, and a closer examination determines the particular part or organ involved.

Knowing the lesion of function we readily determine its influence upon the life in its totality, and upon other parts and functions. It is possible in some cases to provide against these influences, by calling into action other functions which may be supplementary or

vicarious. As for example, if the digestive organs are in such condition that they can not appropriate calorific food, we may for the time being use alcoholic liquors, which require no act of digestion to furnish heat, until food can be taken. Or in similar cases, requiring histogenetic food or the stimulus of beef-essence, we employ it per rectum.

We have similar examples in the relation between the excretory organs—kidneys, skin and bowels. If the function of one is impaired, or there are special reasons why one organ should have rest, we call upon one or both the others, to do additional work. In some of these cases, the vicarious action will free the blood from noxious materials, and thus give a chance for recovery. In others, the relief of the part from work, gives an organ opportunity to recover its normal condition by improved nutrition.

In the study of local disease we not only have in mind the influence of changed function, but also that which may arise from a change in the circulation, innervation, and nutrition of a part. We can not have an excess of blood in a part, without depriving some other part of blood. We can not have a too rapid circulation in a part, without influencing the circulation at large. We can not have an arrest of circulation in a part, without impairment of that blood, and a wrong to the whole of this fluid. We can not have a wrong of innervation of a part, without suffering of the nerve centres and a reaction upon the body at large; as we can not have a wrong of nutrition, or waste, without general suffering from it.

As the mind grasps these varied factors of disease, it is better able to appreciate the present condition, and

provide against other phases of disease. We not only want to know the condition of disease at the present time, but we also wish to know, from this, what will be the probable condition to-morrow, or some subsequent time. If to-day we can arrest the wrongs of life now present, and turn the tide toward the standard of health, well. If not, we wish to make provision, so far as we can, against the wrongs of to-morrow or next week.

Further along, we will give the diagnostic features of the general lesions here named, as well as the more important evidences of local disease. The object in this chapter being specially to direct the mind to the advantages of this classification, in determining the real nature of disease, and as being suggestive of certain classes of remedies. As before stated, there are many lines of thought in diagnosis, and we do not wish to get them tangled. We wish to do our thinking methodically, and in so far as we can, we take one at a time.

PHYSIOLOGICAL DIAGNOSIS.

Some may think the heading of this chapter a misnomer, as they can not harmonize the name physiological, which means *right* life, with disease, which is wrong life. But if we explain that in diagnosis we must have a standard to measure from—that is, health.—then the term, “physiological diagnosis,” is most appropriate. The most important element here is the point to measure from ; without this, diagnosis would be the merest guess work.

It might be asked, how we can harmonize this method

with the diagnosis by, and prescription for special symptoms, as described in the first part of this work? If remedies are indicated by special expressions of disease—symptoms—which may be common to many and different pathological conditions—why not employ this, to the exclusion of all other methods? If it is true to any considerable extent, should it not be true in all cases, and furnish the only sure basis for therapeutics?

These are pertinent questions, and I doubt not many readers have asked them time and again. If a certain pain in the left orbit, a certain appearance of the papilla of the tongue, and a certain sharp stroke of the pulse, says to us that *Rhus Toxicodendron* is the remedy, whether the disease be fever, inflammation of the lungs, conjunctivitis, diarrhœa, or erysipelas, what do we want of a physiological standard? True, in such cases we do not want it as a basis for prescription, and if we know enough of the relation between remedies and disease, we should not make this a study, at least not as a basis for prescription. But, unfortunately, we do not know enough of this. As far as we know it, we base our therapeutics upon it; when it fails, we must supplement it with other methods. Practical medicine is in its infancy, and until it attains the firm step of adult years, we must second it with all the aids that can give it support.

If the reader will refer back to page 216, he will find a table which will serve as the ground-work for this study. We purpose examining the various functions of the body, setting up a physiological standard—health—and measuring from it. We find that all lesions can be grouped under the three heads of—*excess, defect and perversion*—above, below, from. If once we are

able to recognize these departures, and have a knowledge of the action of remedies upon function, we may make a rational selection. If the condition of disease is "above" the normal standard, we employ those means which will bring it down. If the condition of disease is "below" the normal standard, we employ those means which will bring it up. If the condition of disease is a departure "from" the normal standard, we employ those means which will bring it back.

The reader will notice that it makes no difference what "school" of remedies is prescribed from, as it is quite as well adapted to the one as another. Take the gross dose of *regular* medicine, and the physician using it should know the locality of its action, and the quality of its action. And even when the action is secondary or indirect, this method of prescribing is still good, for the mind associates the secondary influence upon a part or function with what needs be done to restore health. If the modern Eclectic prescribes the usual dose of specific medicine, he has clearly in view its direct action upon a part or function, and he associates the action of the drug with that which needs be done to oppose disease, and restore health. Our Homœopathic brother, with his minute doses or infinitesimals, frequently prescribes on the same basis. He knows *where* the disease is, and he prescribes a remedy which specially influences *that* part; he knows the character of the disease, and he prescribes remedies which his experience has shown opposes the disease, and favors the return of health.

Having thus shown the advantage of this study, as being applicable to all systems of therapeutics, and even adapting itself to each individual expression, I

desire to call attention to its value as a training for the mind, and a study of the phenomena of life. "Thinking in straight lines" has been our motto, and most certainly this is such method of thought. As we educate the mind, so it will do our work, and this I think one of the best studies. This is a study of life in all its phases. It is a study of normal life, for without this it has no basis. And it is also a critical study of wrong life in all its phases, for this is its end.

It may be well to call attention again to the too commonly received methods of examination and diagnosis—direct and by exclusion. In direct diagnosis the symptoms are marked and point directly to the locality and character of the wrong. But in some cases there are no such direct symptoms, and we proceed to make an analysis of the life before us, questioning each particular part or function, until we have found the seat and the quality of the lesion. This is diagnosis by exclusion.

FORMATIVE FORCE.—The force of organization is received by inheritance, and the rule reads—as is this force in the parents, so will be its manifestation in the children. Thus it is sometimes an important element in diagnosis, to know the parentage, and in so far as we can, their physical history. From feeble parents we usually expect feeble children. From parents who have had an imperfect organization, and wrongs of blood, degenerations, deposits and growths, we expect children with like imperfect organization, and with the same tendency to disease. If we know that parents have died of phthisis pulmonalis, or other tubercular disease, a cough or articular irritation has a deeper

signification, and we are wide awake to the necessity of early means for protection.

If parents or near relations have had cancer, we view with suspicion any growth that may make its appearance. If they have suffered with Bright's disease, diabetes, epilepsy, insanity, or other similar disease, we are advantaged by knowing the facts.

The force of organization is very rarely in *excess*, probably never, as regards the whole man. Once in a while we notice examples of it as affecting parts. Thus we may have hypertrophy of the adipose tissue; hypertrophy of bone; of the epithelium; of cellular tissue, taking the form of growths. All of these will be readily recognized, though it is not so easy to find remedies which will arrest or modify the condition. Still bearing in mind the distinction between the unknown and the unknowable, we may expect to find remedies for even such wrongs as these.

The wrong of *defect* is very common, and met with in many cases of disease. We recognize it in defective or feeble nutrition, parts being small, wanting normal solidity, and lacking the usual capacity of our standard man. The functional activity is usually the measure of the force of organization; for though the organism in such case may for a limited time give a large amount of work, it is rapidly exhausted, and requires much more than the usual time for recovery.

We may learn that such defect is inherited; that it is the result of bad conditions of life; that it results from over-work, or is caused by disease. Whilst we can not rectify the present wrong of inheritance, we can provide to a certain extent against this in the children of the future. But in the other cases the treatment is

quite plain—we rectify the conditions of life and make them healthful; we prevent over-work, and remove such diseases as influence nutrition. Following this we observe the great law of development—"as a part or function is rightly used, it gains size and capacity." As we exert the force of organization, we call into right action that which the person has, and as it is thus normally used, it grows.

HEAT.—The normal temperature of the human body is 98° and a fraction, say 98.4° . To have healthy life this must be maintained, with but very slight variation; even the change of one degree producing disease. The temperature is accurately determined by the body thermometer, applied in the axillæ, or under the tongue, though it may be recognized less definitely by the touch.

Excess of temperature is met with in fevers, inflammatory diseases, and most diseases accompanied with change of structure. As a rule the excess of temperature is associated with corresponding frequency of pulse, frequent respiration, arrest of excretion, digestion and nutrition. In proportion to the excess of temperature is the activity of causes of disease, of wrongs of the blood, and the tendency to destruction in local disease. Thus to a certain extent, the excess of temperature which we can measure so accurately, becomes a means of diagnosing all the wrongs of life.

As heretofore named, when studying the changes of temperature as an element of disease, the saving feature is the diurnal variations in the range. Though in protracted disease it may reach the height of 105° to 107° , at some period of the day, it falls to 103° to

102°, at others, and in this fall of temperature the person has a promise for the maintenance of life. When the high temperature is maintained throughout the twenty-four hours, the disease is necessarily of short duration, either in a fall of temperature and return to health, or in death.

Excess of temperature calls for remedies which lessen the processes of combustion, and provide for the better removal of heat. The relation between the circulation and the temperature is very suggestive—as is the circulation, so is the temperature—lessen the frequency of the pulse, and you reduce the temperature. Thus the special sedatives are suggested, as among the most prominent remedies. Wrongs of sympathetic innervation (excitement) are associated with excess of temperature, and those special remedies, *Rhus*, *Bryonia*, *Gelsemium*, *Lobelia*, etc., become remedies. Excitation of the brain and spinal cord are associated with excess of temperature, and when noticed, call for remedies which relieve such excitation. Lesions of the blood, especially those of a septic or zymotic character, are associated with excess of temperature, and anti-zymotic remedies are suggested in these cases.

The skin is the regulator of the temperature of the body. In the continued evaporation from the surface, excess of heat is removed. With a high range of temperature the function of the skin is impaired, and transpiration more or less arrested. Among the serviceable means to remove the excess of heat, are those that put the skin in better condition, favoring transpiration. Among these means, baths hold a prominent place, and should not be neglected.

Excess of temperature is quite as important a factor

in chronic, as in acute disease, and its recognition is an important element in diagnosis. Whatever may be the wrong, a range of temperature of 100° and over, means a continuation of the disease, and eventually a destruction of life. On the contrary, amendment is always preceded or associated with a fall of temperature, and if this is maintained at the standard of 98° , we may expect recovery. Thus in phthisis pulmonalis the range of temperature is over 100° , even in the first stage, and if maintained at this, recovery is impossible. If it can be reduced, and held permanently at or near the normal standard, the patient may get well.

There seem to be three factors in this high range of temperature, which require study—the frequency of circulation, a wrong in combustion, and a defect in the means for regulating the temperature. In some cases remedies directed to the wrong of circulation is most efficient, as when we employ *Veratrum*, *Digitalis*, *Cactus*, *Lycopus*, etc. In others the wrong is of combustion, either in a deficiency of some element of the blood, or in an undue excitation of the nerves governing the respiratory function. For the first we think of Cod Oil, the Hypophosphites, Sulphur, and appropriate foods. For the second, Arsenic, Phosphorus, Rhus, Bryonia, Belladonna, Lobelia, etc. In the third the lesion of the skin is prominent, and calls for such means as will restore normal functional activity. It may be the use of baths—alkaline, acid, stimulant, tonic, astringent, inunction, electricity by Faradization, or the use of internal remedies that specially influence this organ.

Deficiency in temperature is less frequently met with, and not so easily diagnosed. If the thermometer in

axillæ or under the tongue, shows 98° , but there is coldness of the extremities and surface, showing in some places not more than 90° , we have determined our case. Or possibly we may find that the normal condition of heat, 98° , can be maintained in a state of rest, but there is little surplus for motion—we have heat as a condition of life, but not as a force. In the last class of cases, the want of power, with exhaustion and lowered temperature after exertion, tells the story.

Deficiency of heat may be dependent upon want of calorific food, upon wrongs of digestion, upon the want of some special material in the blood to facilitate combustion, upon deficient innervation, upon a wrong of the skin permitting heat to be wasted, and upon an impairment of the respiratory function. In our examination of the sick, the mind at once determines a comprehensive plan of examination, and our inquiries proceed in this regular order—with regard to food, with regard to digestion, with regard to the need of special material for the blood, with regard to innervation, with regard to the condition of the skin, and with regard to the respiratory function. Finding the principal wrong, the mind at once turns to the remedies that influence the part and function, and selects from them the special agent or agents that do that which is needed to bring the part or function back to its normal condition.

Unequal distribution of heat is not quite as important an element of disease as excess or defect, but in some cases plays a not unimportant part. If in long-continued and severe chronic disease, we have this unequal temperature—the trunk being too hot, the extremities

cold—no means will prove curative until the temperature is equalized. Physicians may laugh about “equalizing the circulation,” “equalizing the temperature,” but these inequalities are very common elements of disease, and recovery can not take place until they are rectified. Hence sometimes means to restore heat to the part which is too cold, are among the most important to the cure. Take a protracted case of chronic gastritis or dyspepsia, with continued cold feet, and Capsicum in the stockings may be *the* remedy, or at least it will put the patient in the way of being benefited by others.

There are some peculiarities in the temperature that the thermometer will not recognize. For instance, in some cases of zymotic disease, typhoid and typhus fever, protracted disease showing “typhoid” symptoms, the hand placed upon the skin gets a sensation of *pungent* heat, very like that when it is placed upon a surface reddened with mustard, or cantharides. The sensation is very distinctive to most persons, and gives the idea of sepsis, and unnatural irritation of the vegetative nerve centres. There is nothing more certain than this evidence, whenever it is presented, and we are at once awake to the danger to life, and the necessity of means to overcome the morbid process going on in the blood, and to relieve the over-excited nervous system. At once we examine our patient with reference to the indications for the special antiseptic—Muriatic Acid—the Alkaline Sulphite, Sulphurous Acid, Chlorate of Potash, or Baptisia, and with reference to the remedies which influence the nerve centres—Aconite, Veratrum, Rhus, Gelseminum, etc.

ELECTRICITY, like heat, is both a condition of life and a force for carrying on the various activities of the body. Like heat, it may be in excess or defective, or have an unequal distribution. The diagnosis, however, is difficult, for we have no instrument to measure its variations, as we have in the body thermometer.

Excess is determined in part by the unnatural state of excitation, there being no wrong of the nerve centres to account for it, and by a peculiar dry and constricted condition of the skin. In some rare cases the excess is so marked, that sparks may be elicited by rubbing the head or the surface in a dark room. When the evidence is closely examined we will find that the conditions of life have been such as to produce this condition. The patient has been a hard brain-worker, has lived or worked much in a confined room, heated by a stove, causing dryness of the atmosphere, and at the same time has worn clothing that was a bad conductor. Taking, therefore, the symptoms of excitation, the constriction of the skin, and the previous history, the diagnosis is pretty accurate; and if we add to this the evidence of exclusion—no other lesion being found that would account for the symptoms—we are certain of the lesion.

The treatment will look to a change in the conditions of life. Less work, good ventilation, a moist atmosphere, and cotton under clothing. Then will come the use of appropriate baths to rectify the wrong of the skin. And finally, the use of non-stimulating foods, and appropriate remedies to lessen nervous excitement.

Defect in electricity is indicated by opposite symptoms. There is a want of energy, and of capacity for continued effort, that can not be accounted for by any

lesion of digestion, blood-making or nutrition, or by local diseases. The skin is relaxed and atonic, the temperature is inclined to be low, and all the processes of life are performed with less than usual vigor. These symptoms will sometimes be supplemented by a history of the conditions of life. A low situation of house, dampness of living rooms or shops, trades that give a superabundance of moisture in the air, the wearing of cotton, the use of non-stimulating foods, excessive drains upon the system in the shape of sweating, urination, or seminal secretion, etc.

Having thus determined the condition of disease, we at once think of changing the patient's surroundings. He is to have a dry atmosphere, an elevated position if possible, air directly influenced by sunshine, sometimes sun baths, and that kind of exercise which will call into action the respiratory function. This is supplemented by non-conducting clothing of woolen or silk, by the use of stimulating inunction, or dry friction with the hand, or flannel or silk. The selection of proper food is sometimes quite important, animal foods taking precedence. Some of the restoratives are useful, especially the preparations containing Phosphorus, sometimes Iron, and occasionally the Bitter Tonics. These may be supplemented by nerve stimulants, Quinine, Nux Vomica, and agents of like character.

CELLULAR PATHOLOGY.—During the past twenty-five years we have heard much of cellular pathology, and it has been proposed to refer us back to these primary forms for the history of all disease. According to some enthusiasts in the study of cell life, we not only need to study disease as manifested in cell life, but our

diagnosis should go back to reach these primary organisms. Taking the truism, that all wrongs of life must be based upon change of structure, and all manifestations of life flow from, or are the aggregate of cell life, the theory becomes very plausible.

But there is this difficulty: Cells are organisms so minute that they are beyond the ken of our grosser senses. True we can bring them into view with the microscope, and to a limited extent we can determine changes of shape, but even this is somewhat difficult. The best microscopist will fail to detect differences in cells, when the expressions of disease may have been of the most marked character.

It is possible to determine degenerations, some deposits, and to a limited extent growths, but many times the diagnosis would be post-mortem, rather than at such period of life as would give any practical advantage from it. Even in the case of growths, the microscope fails to detect the difference between those which are benign, and those that are malignant. True there are distinctive cancer cells, but then there are malignant growths without such cells, as there are benign growths with those which so closely resemble them, that the best observer may be mistaken.

The microscope will enable us to recognize some changes in the blood-globules, the presence of white globules, some changes in secretion and excretion, and in the formation of pus, and in so far as it does this, it is a valuable aid. Yet in the main, we find it better to rely upon the more common and gross expressions of disease, especially as these are suggestive of remedies.

If by conceding that life is from cells, and that as are

these cells, so is its expression, we must be referred to cells in the study of disease, we may go one step further back and say that all life is from molecules, and as are the molecules so is the life, and refer you to the compound molecules. Failing in this to get beyond the human senses, we might go a step backward, and endeavor to fix the life of health and the life of disease in the ultimate atom, when surely we will be lost. Molecular pathology is quite as rational as cellular pathology, quite as easy in diagnosis, and furnishing just as good a basis for therapeutics.

NUTRITION.—In studying the diagnosis of lesions of nutrition, we observe the same order. Having clearly before us the factors—food, digestion in mouth, stomach, intestine, the process of blood-making, the circulation, the condition of the tissues with reference to appropriation, and even the adverse side, retrograde metamorphosis. Any one or more of these factors may be wrong, and we desire to so localize it, that we can select our remedy with certainty. It would be most absurd, to give “Bitter Tonics and Iron,” when the wrong was a want of proper food; quite as absurd to employ a stereotyped tonic when the patient failed to properly masticate and insalivate his food, or when the lesion was one of the intestinal canal, or a wrong of the circulation. We must know the exact location and character of the lesion, if we are to prescribe with certainty.

Many wrongs of nutrition are dependent upon a want of proper food. In this country where food is abundant, it is not usually the want of foods in gross, as it is a want of proper selection and preparation.

As the attention is directed to this matter, inquiry soon elicits the facts of wrong food, or bad cooking in which good food is spoiled, and we are able to set our patient right.

We not unfrequently find that food is wrong in kind, though it may be good in quality, and well prepared. If a man wants animal food, vegetables containing a large proportion of starch will not answer well; if he wants calorifacient food, it does not do to feed him upon beef-tea. Again we must have regard for the power of appropriation by the individual, who may be able to digest certain varieties of food, when he can not others.

Wrongs of *buccal digestion* are easily diagnosed in the majority of cases by the history given. The patient eats rapidly, "bolting his food," which is not properly chewed or insalivated. Or he may be an habitual tobacco chewer or smoker, and thus by continued abuse of the salivary glands have so changed the character of this secretion that it can not do its work.

The treatment of such cases is very plain. The patient must be instructed as to the uses of the mouth, and the necessity of amending his bad habits. Abundant time is to be given to each meal, and the food thoroughly masticated. If tobacco has been the cause of trouble it is to be dispensed with in all forms. Frequently this, without medicine, is sufficient for the cure of severe cases.

The wrongs of *stomachic digestion* are frequently announced by unpleasant sensations which the patient refers to the stomach, and points you directly to the seat of the trouble. We have the evidences of indigestion, and a wrong of blood-making and possibly of nutrition, in addition to the localization of unpleasant

sensations. Of course the unpleasantness varies in different cases, and has the entire range between sensations of fullness, weight, heaviness, to the most exquisite pain.

But having thus localized the lesion, we have only made a commencement, for it is necessary to know its character, and this may be determined in part by the sensations of the patient, and examination of the tongue and the epigastrium, and by the discharges from the stomach. It is possible first to arrange these lesions in two classes—irritative and atonic—and even to make these classes embrace structural lesions. Probably this is the simplest, as it is certainly the best classification, because it points out the remedies required. Remedies influencing the stomach are readily divided into sedative and excitant—the one removing irritation, and the other giving stimulation.

The evidence of irritative lesions is found in uneasiness or pain of a somewhat acute character, tenderness on pressure over the epigastrium, and in many cases by injection of the papillæ of the tongue, especially of the tip and edges, giving the characteristic redness. We have every degree in the intensity of these symptoms, from the slight irritation with determination of blood, to the well developed inflammation.

With these evidences of disease, the mind at once turns to those remedies which allay irritation—Hydrocyanic Acid, Peach Bark, minute doses of Aconite, Ipecac, Rhubarb, Bismuth, Oxide of Zinc, and some of the simpler stomachic bitters, as the Hydrastis. If we have the general indications for a group of medicines, we will find it much easier to select the special one which will be most efficient. The reader will notice

that these remedies are alike applicable in all cases characterized by irritation and determination of blood, even in cases of severe structural disease.

The evidences of *atony* are impaired circulation and innervation, and want or perversion of function from this, is found in sensations of weight and fullness in the epigastric region, a sense of oppression referred by the patient to the epigastric region. When we examine the patient we find that the expression of the face is dull, the movements listless and show a want of energy. If we examine the tongue we find it full, and expressionless, in some cases pitting where it comes in contact with the teeth. As a rule there is increased secretion of mucus, and the bowels are constipated.

The symptoms above named point the physician to that class of remedies which are topical excitants to the stomach, and that stimulate a better circulation and innervation. *Nux Vomica* and *Strychnine* may be taken as the type of such stimulants, and are frequently employed when the impairment is temporary. The bitter tonics—stomachic tonics—are the remedies usually selected when the impairment is of longer duration; *Hydrastis Canadensis*, *Gentian*, *Columbo*, etc., may be taken as examples of this class. With atony there may be irritability, and in such cases the remedies might be *Amygdalus Persica*, or *Matricaria Chamomilla*. If the atony is very marked we may employ topical stimulants, as *White Mustard*, the peppers, or combine with the stomachic bitter small portions of *Podophyllin*.

Atony with *increased mucous secretion* will be marked by the coated tongue, yellowish or gray, especially toward the base, full and expressionless features, dull eyes, and evidence of oppression.

In acute disease it may call for an emetic, may be relieved by a cathartic carefully given, by the use of saline diuretics, or by the use of the Alkaline Sulphites.

Excess of gastric juice will usually be known by its eructation, the sense of acidity of stomach, elongated papillæ of the tongue tipped with white, and mal-digestion.

For it we think of remedies that allay irritation, or that remove diseases of which this is sympathetic, as of Bismuth, powdered Charcoal, the Alkalies, or the Acids, as may be indicated by other symptoms.

Deficiency of gastric juice is shown by mal-digestion and eructations of undigested food for some hours after eating.

It may require stimulants, tonics, acids, alkalies, Podophyllin, etc. Recognizing the deficiency, the mind is directed to the cause, and when determined, the treatment will be very direct and certain.

Excess of acid is determined by the eructations, and the sense of acidity, but if of the blood as well it will be shown in pallor of mucous membranes.

Whilst the alkalies would seem to be the direct remedies in the treatment of these cases, they are really curative only where there is evidence of this lesion of the blood. In other cases the cause must be determined. Many times it is a wrong of innervation, and when this is removed, the acidity ceases. In some cases, indeed, acids have a more direct influence in effecting a cure than the use of alkalies.

Deficiency of acid may be known by the unpleasant fluid eructations, greasy if fatty matter is taken as food. The general defect will be shown in the deep

redness of mucous membranes, and wherever blood comes to the surface.

This is sometimes the cause of serious functional wrong, and until the acid is restored digestion will not be well performed. In these cases we usually think of Muriatic Acid as the remedy, though in many Lactic Acid will give the best results.

The symptoms pointing to Pepsin as a remedy are not very direct. Indeed if we should say there was an entire absence of symptoms it would be a better guide to the physician. Given a case in which there is indigestion or enfeebled digestion, and there are neither evidences of irritation nor atony, acidity nor alkalinity, or wrongs of innervation, or disease of which this may be sympathetic, and we would say, give Pepsin.

The wrongs of *intestinal digestion* require care in diagnosis, as many of the symptoms are obscure and indirect. The lesions may be classified as in case of the stomach, into irritative and atonic, and the sensations of the patient, if they are described, will usually lead to a correct conclusion. The pinched expression of face, the loss of adipose tissue, giving a shrunken appearance of body, the contracted tongue, slick, seemingly divested of papillæ, tell the story of irritation. The atony will be indicated by fullness of the abdomen, with a sense of atony as the hand is passed over it; the full, doughy tongue, inclined to be coated, and the general oppression of the nervous system, give very clear intimations of the character of the lesion.

The irritative condition calls for Aconite, Ipecac, Matricaria, Amygdalus, Bismuth, the stomachic bitters, *Opilobium*, etc., and they may usually be selected with

considerable certainty. The atony calls for Nux Vomica, Chelidonium, Podophyllin, etc. In many of these cases the combination of Podophyllin in minute doses with one of the simpler bitters, answers an excellent purpose.

As a rule good *blood-making* follows good digestion, and having secured the one we are not troubled to look after the other, yet sometimes we have the fault here and must rectify it. Good blood-making is dependent upon the conditions already named. There must be a normal temperature, a normal circulation, normal activity in use, normal waste and normal excretion. If there is a wrong of either factor we may expect some degree of wrong in the making of blood, and in nutrition. If at any time we suspect this lesion we examine our patient thoroughly with reference to these important functions, and finding the wrong, whatever it may be, we right it.

There may be a want of some particular material in order to make good blood and good tissue. This has been recognized by physicians, and is the basis of that called restorative medication. We have already seen that the physician must select the proper food for his patients, and that more may depend upon giving histogenetic or calorifacient food, than upon medicine.

"Restorative medication" is an indefinite term, as used, and may mean remedies that stimulate an appetite, increase digestion, giving of proper food, as well as the use of those agents which add a needed constituent to the blood. It would be better to restrict the term to the use of agents that enter into the formation of the blood and the tissues. We may sum these up as Iron, Phosphorus, Soda, Lime, Potash, Sulphur, Silica,

Copper, and the bitter principle. These may not be all, but if we can get a clear conception of their use, the wrongs that follow their defect, and the symptoms that point them out, we will do well.

As Iron is the coloring material of the blood, want of color is generally regarded as indicating the use of this remedy as a restorative. In some cases the evidence is sufficiently clear, and when Iron is given the effect is direct and positive. If taking the symptoms, "want of color from blood," we are careful in our examination to exclude those cases where other and primary lesions exist, the certainty would be almost absolute. But there is another indication quite as certain as "want of color," when tissues, especially the tongue, show a solid but not deep blue. In these the action of Iron is specific. Again we find certain lesions of the blood, more noticeably those which give an erythematous eruption (erysipelas), in which the redness is dirty or dulled, in which Iron is specific.

When the diagnosis is carefully made, the action of Iron will give great satisfaction. A recent case of uterine disease of long standing with greatly impaired nutrition, presented as a prominent feature frequent erythematous eruptions of this dirty, though somewhat vivid redness, and the cervix uteri and vaginal tissues presented the same color. One grain of Iron by Hydrogen three times a day, was sufficient to effect a cure in a month. In another, where there was impaired nutrition of many years' standing, and no direct symptoms but the solid blue tongue, the patient made a quick and good recovery on Iron alone.

The best indication for Phosphorus in its varied forms, will probably be found in the *want* of expression,

both in the face and in movement, an enfeebled respiration and unequal temperature. The sensations of the patient may point to impaired nutrition of the nerve centres, or simply to a general failure of life. The indications for Phosphorus in the ordinary dose, are invariably of atony—impairment of the circulation and innervation. In a minute dose it may be used where there are evidences of vascular and nervous excitement with enfeebled tissue—as instanced in low grades of inflammation of the lungs.

Soda is a true restorative in some conditions of disease. If deficient in quantity every function of life is impaired, and without its restoration recovery can not take place. In some cases want of Soda is the basic lesion, and its administration all that is necessary for a cure. In others this deficiency is but one of many lesions, and the giving of Soda will be but one of the means employed.

The indication for the use of Soda is clear and unmistakable—want of color in mucous membranes—which are usually full. Usually we are guided by the tongue, and the expression would be *full* and *pallid*—Soda.

The indications for Lime are not so distinct, but yet quite definite. We are in the habit of saying that Lime is indicated in all idiopathic cases of suppurative disease of cellular tissue. The very fact of inflammation with a low euplastic or cacoplastic deposit, not the result of injury, evidences a peculiar wrong, and for this Lime is the remedy. Furuncular disease in all its forms, finds a remedy in Lime. In the majority of cases, there will be pallor of mucous membranes, though in some cases they will be purplish or blue. Lime is

employed in chronic disease of the lungs, with caco plastic deposit, determined by a low grade of inflammation.

The indications for Potash will be found in *pallor* of mucous membranes, calling for an alkali, and impairment of muscular power. In most cases a dull, leaden hue of mucous membrane with pallor, will point especially to the Salts of Potash. A marked example will be found in syphilis, in which this coloration is the indication for Iodide of Potassium. In some cases a Salt of Potash may be needed, even though the deep coloration calls for an acid; this is sometimes seen in scurvy. Here the Soda is excess, Potash is defect, and the patient is cured by the administration of Lemon juice and vegetables containing Potash in large quantity.

The best indication for Sulphur as a restorative is a change in or want of the pigment of the skin and hair. In some cases the dull, dirty color may call for Sulphur, in others the blanched surface. Rapid loss of color in the hair will sometimes be an indication. Sulphur is also indicated by a peculiar blue or leaden color of urine and fæces. It would be designated by some, "want of color," and so there is a marked lack of the natural coloring material of these excretions. If I were picking a case to obtain the most marked curative action of this drug, I would take the dirty or tawny skin with bluish urine.

The indication for Silica is not very well known. I have used it with most advantage when the epithelium had a lifeless appearance, and there was continued tendency to desquamation. In some cases these symptoms are followed by severe ulceration of the skin. Hahnemann claimed that it was a valuable remedy in

rachitis of children, and named sweating of the head, as one of its most prominent indications.

Copper is not usually regarded as a constituent of the body, yet I think it is clearly proven that it is present in small quantity. The indication for its use is the unpleasant greenish pallor of skin met with in some diseases of women, and a very similar coloration of tongue. In some cases the patient has not lost flesh, and nutrition seems to be quite as good as usual, but there is a want of energy and power of endurance.

The Bitter Tonics are in such common use, that it would seem hardly necessary to point out the indications for their use. But one would find it a little difficult to point out clearly the cases in which the bitters are direct remedies. One might say "want of appetite," and as by their topical action they are appetizers, he would guess his case off right with the majority. Or we may say "impaired digestion," and by their topical action they do improve digestion, and we would be right in the majority. Or we might say "enfeebled nutrition," and as they do improve nutrition, we would make a right diagnosis in a great many cases. The blood requires a bitter principle, and its want is the cause of most serious disease, yet I can not point the reader to any better evidence of it than impaired appetite, digestion and nutrition.

Further along, we will see that a right circulation is essential to carry the blood, thus well made, to the tissues where it is to be used. Wrongs of the circulation impair the quality of the blood, and the power of the tissues to withdraw from it the materials for nutrition. Thus in all cases of lesion of nutrition a right circulation must be maintained. In this connection attention

may also be called to the necessity of having the normal temperature of 98°, which, as we have already seen, is a condition of healthy life.

A patient may have good food, good digestion, and good blood-making, and yet there will be a failure in nutrition. If the tissues are not in a condition to appropriate the material and weave it into organic forms, the patient would be better not to take it as food. We have already referred briefly to the properties of formative cells, and have seen that we have no means of determining their condition, except by the physical properties of the tissues *en masse*. If they have normal hardness, elasticity, form, and activity, we have reason to conclude that nutrition is good, in so far as the power of appropriation is concerned. Conversely we may say, if they want hardness, elasticity, form, and activity, there is a want of power to organize new tissue. Diagnosis is here made by the tactile and visual senses, and will be valuable just in proportion as these have been trained to use.

Concluding from these evidences that the tissues lack the power of appropriation, what will be the remedies? In so far as internal remedies are concerned, we have but few that influence the function of the formative cells. To a limited extent, some of the bitters may do this. Yet when we subtract their topical influence upon the digestive apparatus in increasing the appetite and improving digestion, and the slight stimulant influence upon the circulation and innervation, there is but a small fraction to be accounted for.

Want of hardness, elasticity and activity will show a want of nutrition, whilst the change in form, want of expression—dull and lifeless—may be taken as evi-

dences of a want of retrograde metamorphosis. We have already made reference to the great law of animal life—as an organism is used it gains the power of reproduction and increased use; as it is disused it loses this power. But it is well not to forget that over-use will impair reproduction, the forces of life being thus exhausted. In many cases, after providing for good food, good digestion, and good blood-making, a good circulation, normal temperature, and good innervation, we stimulate the appropriation of material by the tissues by well regulated exercise. Or if the patient is over-worked, and thus exhausts his powers of reproduction, by recommending rest.

In some cases the patient requires exercise under the influence of the will, innervation in this way being of as much importance as the activity of tissue. In other cases it requires passive movement, with as little expenditure of nervous power as is possible. In some cases the stimulus of electricity becomes an important means, and by its general use normal nutrition of tissues may be obtained.

The character of *deposits* may usually be determined by the symptoms indicating the condition of the general health, and by the local appearance of the part when near the surface. Bearing in mind that good blood will give euplastic deposits, an inferior blood cacoplastic deposits, and a very poor blood aplastic deposits, we will be in a pretty good position to judge. The means of determining this have already been pointed out.

As regards the local symptoms we may say that the inflammatory process, regular in its course, is the best evidence of euplastic deposit. All irregularities,

whether of time, intensity, or of the common symptoms—heat, pain, redness or swelling—point to a deposit of lower character. So certain is this that the physician will very rarely make a mistake if irregularities cause him to employ greater vigilance. If for instance, in local disease, there is too much or too little heat, too much or too little pain, too much or too little swelling, too much or too little redness, or if the color is changed, we are sure the deposit, if there is one, will be low in character. So if the disease runs its course too rapidly, or progresses too slowly, we conclude that the deposit will be of lower grade. So true is this, that we look with suspicion on all alterations of the inflammatory process, and use extreme care in the treatment of such cases.

Degeneration is not easily recognized, and in a majority of cases it progresses until the destruction is beyond remedy. Of course I exclude granular degenerations of the kidneys (known by albumen in the urine), and degeneration of the liver (known by jaundice), which present characteristic functional disturbance. The gradually decreasing power of continued exertion is an important point in the diagnosis. Persons having degeneration will find themselves incapable of prolonged exertion. There is a want of expression in every part, and the soft tissues sit upon the bones like an ill-fitting suit of clothes. A want of sharpness and strength in the wave of blood as it passes under the finger is an additional element.

In the treatment of degenerations we wish to re-establish this "renewal of life." Whilst we want good food, good digestion and blood-making, adding any agents of the class restorative that may be needed, and

an active condition of the formative cells, we also want increased retrograde metamorphosis to remove the old and degenerated tissue. In so far as the tissue is degenerated it can never be replaced, but it is possible to so improve the function of nutrition, that what yet remains may serve the purpose of the organism.

The diagnosis of *growths* belongs to the province of surgery, and requires but a brief notice here. They are classified as benign and malignant, and to determine to which of these two classes a growth belongs is the first object. As a general rule we may say a *benign* is a growth from the tissues, whilst a *malignant* is a growth in. A benign growth is distinctly separate from the tissues, and though it may be deeply seated it obtains room for its enlargement by separating them, and occupying the place of the connective tissue. It may interfere with the nutrition and use of tissue by pressure and weight, and in rare cases when inflammatory action is set up may form adhesions to them, otherwise it maintains a distinct and separate existence. On the contrary, a malignant growth takes possession of the tissues of the body, and grows in them, transferring the structure into its own lowered forms. It is no respecter of tissue, and occupies one quite as readily as another, taking possession alike of skin, connective cellular tissue, muscle and bones, using the fibrous tissue as its skeleton, and the blood-vessels, lymphatics and nerves, for its supply, waste and innervation.

The reader will notice that if in any case it be possible to determine the condition of a growth—from or in—the diagnosis is readily made. A growth that does not interfere with or take possession of tissue, is of necessity benign, whilst a growth that does appropriate

the normal tissues is as surely malignant. In a majority of cases careful inspection of the part will determine this.

A benign growth is generally of uniform consistence, smooth, and of equal elasticity as the hand is passed over it. The reader will readily see why this should be the case, as it has a single point of origin and supply, and consequently a uniform development. But in the case of a malignant growth, its consistence and elasticity will depend to a considerable extent upon the tissues it appropriates, and hence it will be of unequal hardness and elasticity—nodulated.

There is a marked difference in the sensations of the part. The benign growth has no nerves, and any sensation experienced will be from its pressure or dragging upon adjacent parts. The malignant growth appropriates the nerves of the part, and hence interstitial pain of a peculiar character is usually found in these cases.

A benign growth has no lymphatics, and does not influence the blood other than by withdrawing the materials for its supply. On the contrary, the malignant growth appropriates the lymphatics as it does other tissue, and furnishes through them a cancerous lymph which eventually produces the constitutional impairment so generally noticed.

SECRETION.

Among the important functions changed by disease secretion holds a first place, and in the practice of medicine remedies influencing the secretions have held

a first place. But very crude ideas of the function of secretion have been held, and of course the medication based upon these was equally crude and empirical. Whilst physiologists have been pretty clear in their teaching that (in the main) secretion was purely a vital function performed through certain cells, called secretory, physicians have acted as though they believed it a purely physical process, like the osmose that occurs through an animal membrane. If secretion is a vital process, life is an essential, and the conditions of life necessary; if it is a physical process of straining, then a dead tissue may secrete as well as a living one.

There is little use to talk of diagnosis here, unless we have first a clear idea of the apparatus of, and the conditions for secretion. If we can clearly appreciate that in the case of all the secretions—recrementitious and excrementitious—there must be a membrane continuously giving birth to secreting cells, and that these grow to the normal stature of cells, withdraw from the current of blood the special material of their secretion, and then discharge themselves with it in the common duct, we will have a basis for correct diagnosis and therapeutics.

Taking one step further, we find that function not only depends upon life, but upon the normal conditions of life. This is true of every part and every function of the body. Studying the life of cells, and secreting cells bear a very close relationship to formative, we find that a certain temperature, circulation and innervation are necessary.* Probably the life of the secreting cell

*These conditions are as necessary to the entire organism as to the individual cell, otherwise we would not be benefited by

is not so much affected by changes of these, as the life of the formative cell, but in a certain range it is so dependent; whilst the range is greater the effect beyond certain points is just the same.

The cause of lesions of secretion may be general or local, and the diagnosis is made by an analysis of general symptoms influencing secretion at large, and symptoms pointing to local lesion of the secreting organs. When secretion in general is affected, we have good reason to think that the lesion is general; when but a single secretion is affected we have good reason to believe that the lesion is of the organ-furnishing the secretion.

When all the secretions are involved, the cause, as a rule, will be found in changes of temperature, circulation, innervation, digestion, blood-making and waste.

knowing them. We have constant cognizance of the gross form, while the minute structure is beyond our vision only as we bring the microscope to bear upon it. Let us now see how they are applicable to the body as a whole.

First.—An original viability is seen to be an imperative condition. A want of this gives us hereditary diseases and early death. A want of it also gives us an enfeebled life and a want of resisting power to the ordinary causes of disease; while a strong viability gives great resisting power to disease, and long life. This has already had a partial consideration.

Second.—A proper supply of nutrient material is also an absolute condition, as man only lives by a constant renewal of his body. The material for this renewal being furnished, and the cells possessing a normal formative power, life continues in a regular manner.

Third.—The circumstances favorable for normal development in man are a normal circulation, innervation, temperature, and excretion.—*Principles of Medicine.*

If now secretion is to be restored to its normal condition, we want normal temperature, normal circulation, innervation and waste, especially the first three. In a large majority of cases, secretion is re-established so soon as the conditions of life permit, without the use of special means to this end. Thus in acute disease, if means are employed to rectify the wrongs of circulation, the temperature and innervation, we find that the tendency is to a re-establishment of secretion as the conditions of health are approached.

Local lesions of the secretory apparatus are best classified as irritative and atonic, as it points out the classes from which our remedies are to be drawn. When a part is involved there will be in nearly all cases such unpleasantness of it as will call the attention of patient and physician to the wrong. It may be pain, or something less pronounced than pain, but it gives the special part a distinctive character separate from the general life. In health the body is a unit, and all sensations are pleasurable, in local disease there is a feeling of separateness between the part and the life, and the severer the disease (as a rule) the more distinct this feeling which regards the suffering part as distinct from the life—a foreign body, which it would be well to get rid of.

It is true these subjective sensations are not always pronounced, and in some cases the suffering is so manifested that it seems of some other and distant part. Yet if the patient's attention is excited, he readily determines the wrong sensation, and our knowledge of nervous distribution and sympathies will soon translate the character and situation of pain.

The reader will already have been impressed with

the character of pain as determining the condition of a part as regards excitation and atony. Excluding neuralgia, acute sharp pain is the evidence of undue excitation and an active condition, whilst dull pain and sensations of weight and fullness, indicate atony, with impaired circulation and innervation. It may be said that this method of diagnosis is too gross and arbitrary, but I think in the majority of cases it will serve as a good basis for the selection of remedies.

With this method, we should say the absence of local symptoms points to general disease, and we carefully examine our patient with reference to the conditions of normal secretion. Finding the wrong in temperature, circulation, or innervation, we select from those remedies that influence the particular function, and take that one which in its action is opposed to the disease, and in its influence brings the functional wrong toward the standard of health. Determining a local wrong, we at once think of those remedies that especially influence the organ or part, and take that one which in its action will do that which favors the healthy life of the part. Nothing can be simpler than this in theory, as nothing, I am sure, will furnish a better basis for a successful practice of medicine.

Secretion is divided into two classes, recrementitious and excrementitious, and it is well for the reader to have a good knowledge of these distinct from each other, learning the uses of each. We want to know the simple facts, with regard to the use of saliva, gastric juice, bile, pancreatic fluid, and the small glandulæ of the intestine in digestion, that we may weigh the wrongs which may arise from changes in these secretions. We want to know the value of mucus as a

lubricant and protector of mucous membranes, and of the sebaceous secretions as a lubricant and protector of the skin. And we want to know the value of excretion from the lungs, the kidneys, skin, and bowels, as a means of removing worn out and effete material from the body. It is direct thought that we want, for when the mind is directed to a single object it readily grasps it, but when it is made to embrace a multitude of objects, they become indefinite and indistinct.

If, for example, we are called to a case of increased secretion of saliva the diagnosis is easily made, for the senses can not fail to be impressed by the increased amount of fluid in the mouth. But the questions that follow are not so easily answered—is it mercurial from local disease of the salivary glands? from disease of parts contiguous? from diseases of the digestive apparatus below? from disease of the brain? or from a lesion of the sympathetic system of nerves? It seems difficult at first to make such diagnosis, and yet as the mind considers one after the other of these, with such light as additional symptoms may throw on it, the problem is soon solved, and in its solution we are directed to the particular class from which the remedy is to be selected, and possibly the special remedy which will cure.

The example given above is one of the most complex, and we will find the others simpler. If we take the secretion of gastric juice we might make a different study. First, is the disease general, local, or sympathetic? If the examination is carefully conducted, the absence of evidence of local disease, and of parts with which the stomach is in special sympathy, and the evidences of general lesions which might affect the

stomach, will determine the first classification. But if the local symptoms were pronounced, and there was wanting the evidences of general or sympathetic disease we would have determined the second classification. Whilst if we had pronounced disease of parts with which the stomach sympathizes, as of the uterus or brain, but without marked symptoms of local or general disease, we would have determined the third classification. It may be that we will find two, or possibly three of those causes in some cases, but we reach our conclusions by these methods of examination and thought.

If we take the liver as the next example, we will find it necessary to employ a different method. The first questions we ask are with reference to local disease. Has the patient unusual sensations in the right hypochondrium, of pain, weight, distension, pressure upwards on lungs, toward the mesial line on the stomach? is there tenderness on pressure, sense of fullness when the hand is passed over the part, or can the organ be felt below the margin of the ribs? Is there expression of disease from adjacent parts, as from the bowels, stomach, lungs? Is there a wrong in the uses for which the bile is secreted?

It is always well to get rid of old-time errors, and in these methods of diagnosis we wish to start with a right physiology. What is the use of bile? Your physiologist will tell you, possibly, that he does not know, but he is sure that it is not, as was formerly thought, an excretion, but that it is elaborated to serve uses in digestion and blood-making. As you read on, and think of what you are reading, you see the absurdity of the old practice of medicine, which was con-

tinuously looking after the liver and the secretion of bile, and talked glibly of *liver complaint*, *liver disease*, "your liver is affected," and about liver pills, cholagogues, "touching the liver," etc. It requires but little study to get rid of this old rubbish, and reach the conclusion that the liver does its work very kindly and well, and is an organ that aids nutrition, and not waste. If, therefore, we find a wrong of intestinal digestion, in which the liver is very surely concerned, we may look after the condition of this organ.

The secretion is peculiar in color, and sometimes wrongs of the liver may be determined by this. Thus fecal matter is to some extent colored with biliverdin, and if the color is dark we say, excess of bile—if it is light we say deficiency of bile. This method of diagnosis is a little crude, for there are many sources of error. Thus Lehman showed that the peculiar green stools following the administration of Calomel were not due to any action of that drug upon the liver, but to the presence of Sulphate of Mercury in the fæces. An excess of acid may also produce *green stools*, as a deficiency may render them lighter in color.

The cutaneous pigment will prove a better guide than the color of the fæces. The yellowness of jaundice will be called to mind as an instance, and many will recollect brownish spots—liver maculæ—that are very clearly traceable to the liver and its associate organs. But a change in the pigment less marked than this has a very definite meaning. I allude to a *tawny* coloration of the skin, giving it a dull, dirty appearance. I believe this always points to a wrong of the chylopoietic viscera, especially to innervation from the

solar plexus, and indicates the class of remedies that have been regarded as "liver medicines."

But the really important point to determine in these cases is, the condition of the organ with regard to excess or defect, in its circulation and innervation—is there excitation or atony? The symptoms are usually distinct so far as this is concerned, and the remedies will be clearly pointed out. And yet there is nothing in which mistakes are so frequently made. Take, for instance, a case of jaundice, and the teaching of the books, is to give hepatic stimulants—Podophyllin, Leptandrin, Blue Pill, Calomel, etc., without reference to the condition of the liver. But in one-half the cases, there are evidences of excitation in pain, tenderness on pressure, and accelerated circulation, increased temperature, dry skin and scanty urine. Surely hepatic stimulants are not remedies here, and they usually do much harm instead of good. In such case the patient requires the special sedatives, Gelseminum, Acetate of Potash, the bath, and possibly the cold-pack or fomentations to the right hypochondrium. In the opposite class of cases, with sensations of weight, fullness, oppression, unequal temperature, etc., such remedies as will stimulate the liver and associate organs will prove remedies.

Again we wish to know in this connection that the bile pigment when once deposited in the cutaneous tissues is never removed by way of the liver, but is always excreted in principal part by the kidneys. In so far then as getting rid of the unpleasant coloration of skin in jaundice is concerned, we might just as well give a remedy to act upon the salivary glands as the liver. There are scores of these olden-time errors in

practice that can only be gotten rid of by a careful study of physiology.

The pancreas does a most important work in secretion, one which the physiologist clearly understands, and yet we hear nothing about "pancreatic complaint," "pancreatic disease," or "touching the pancreas." Indeed there are no pancreatic remedies in our *Materia Medica*. Why is this? There is nothing like getting these subjects fairly in view, that we may think of them. Lehman remarks—"The *function* of the pancreatic fluid in digestion, may be two-fold, according to the above mentioned properties, namely: *to change starch into sugar*, and to decompose the fats, so as to render them absorbable. That it actually performs the former in digestion, has been placed beyond doubt by numerous experiments. The pancreatic fluid possesses this property in a much higher degree than the saliva; it is operative at even a low temperature; neither bile, nor gastric juice, nor free acids, interfere with the function of the fluid."

What then would be symptoms of disease of the pancreatic secretion? Most surely they would be functional, and we would find them in imperfect digestion of calorific foods, a deficient supply of burning material, and a more or less rapid consumption of the fat stowed in the body. We would naturally expect to find unchanged starch and fat globules in the *fæces*, and examination shows that this is the case. Just so soon as we begin to reason rightly, we reach definite results.

But if we have no "pancreatic medicines," how will we rectify these wrongs, after we have found them? This is also easy enough. There are in almost all cases

certain general lesions of the circulation, temperature, innervation, excretion, etc., easily recognized, and which must be relieved in all cases preparatory to a successful local treatment. As local remedies we may think of *Veratrum*, *Cactus*, *Chelidonium*, Oxide of Zinc, *Nux Vomica*, *Podophyllum*, Iodine in minute doses, *Panax*, etc. They all act "there or thereabouts," and we can choose from the list those that act in the right direction.

To the doctor in ordinary, the intestinal canal is a place to put pills, powders and potions, for purgation. Bowels were made to be moved, and it is the doctor's business to move them, and sometimes, it seems, it is almost his whole business. He never thinks that the intestinal canal is a digestive apparatus, and if he has ever learned this in his physiology he has forgotten it. And yet this function of the intestinal canal is really the most important element in digestion.

In addition to the bile and pancreatic fluid, we have an intestinal fluid secreted by the "bottle-shaped" glands of the alimentary canal. With regard to this Lehman remarks—"The intestinal fluid serves, as regards its function, as a complement to the digestive fluids, the gastric and pancreatic fluids, which become inoperative toward the middle of the small intestine; it possesses not only, as the latter of these does, the power of rapidly changing starch into grape sugar, but also of dissolving and rendering absorbable flesh and other protein bodies. In tied knuckles of intestine, into which starch or paste has been introduced, all the starch is transformed into sugar at the end of three hours, and in a great measure absorbed. Pieces of meat or coagulated albumen disappear from such knuckles after six to fourteen hours."

This is good reading, my friend of many cathartics, and it is well to give it a prayerful consideration. Here is a fluid that will do the entire work of digestion, and here is an apparatus that really does do a considerable part of it. When you have occasion to use the old-fashioned harsh remedies, think twice, and possibly you may see that the wrong done to this important function may outweigh, many times, the good that comes from counter-irritation.

The remedies named above, for wrongs of the pancreatic secretion, may be employed here, with some additional ones. What we want to know, as a basis for a rational prescription is—do we want sedation or stimulation—do we want it of the circulation, or the innervation, though these are usually associated. It is hardly worth while to point out now the special indications for Amygdalus, Bismuth, Nux, Chelidonium Aconite, Ipecac, Nitric Acid, Podophyllin, etc., for their uses will have been learned elsewhere.

Mucus is secreted to lubricate and protect mucous surfaces, and in normal amount it favors the performance of function. Wrongs of the secretion are usually easily determined. If of the outlets of the body, the condition may be seen and felt. Thus it is easy to recognize increased secretion from the nose, throat, and genito-urinary passages, from the abundant discharge. Increased secretion from the bronchial mucous membranes is known by its discharge, and also by the blowing and rattling sounds heard during cough and on auscultation. Increased secretion of mucus in the stomach is usually shown by the heavily loaded tongue at its base. Whilst increased secretion of mucus in the intestinal canal will be shown by the uniformly dirty

tongue, and by the tumid abdomen. Scanty secretion gives rise to irritation, and this is one of the prominent signs, and taken together with the absence of discharge is very good evidence.

With a want of mucous secretion we ask the questions—what are the general wrongs, operative in this case? what is the condition of the mucous membrane, as regards its circulation and innervation? It is a rule in practice, to rectify any general lesions, preparatory to the cure of local disease, and many times with this the local disease will disappear. Thus in a given case of acute disease, we have a frequent pulse, high temperature, and excited innervation, with dry mucous membranes; the use of the appropriate general remedies will establish secretion. And on the contrary, if secretion is too free, the use of appropriate general remedies will lessen it.

When we think of local remedies we want to group, *a*, those which act upon mucous membranes; *b*, those that act upon the special organ, part, or function involved. Having the classes of remedies before us, we now select a stimulant, sedative, or one which by its action tends to change the character of the secretion or function. It is not difficult to select a local remedy if we know exactly what needs be done, and we have a clear knowledge of the value of remedies.

A change in the sebaceous secretion frequently gives rise to cutaneous disease. If our attention is directed to the function of this secretion, as a lubricant of the skin, its lesions will readily be detected. The treatment here will have reference to the condition of excitation or atony of the circulation and innervation, and to changes in the nutrition of the organ. Sedatives in

the one case, stimulants and tonics in another, and remedies that alter morbid action in others, will be selected to meet the different cases.

A wrong in the secretion of tears, or the meibomian secretion, may occasion serious trouble with the eye. Profuse lachrymal secretion is sometimes a source of irritation, always a source of feebleness to the tissues. Scanty secretion on the contrary, by leaving the eye dry, and without the protection given by this fluid, is a cause of irritation. The secretion of the meibomian glands serve an important purpose, and when in excess or defect, the function of the eye is impaired, and unpleasant disease may be grown.

Just so soon as the mind is directed to the parts which *may* be diseased, it is pretty certain by direct symptoms or by exclusion, to determine the exact location and kind of disease. Then knowing the action of remedies, local and general, these may be selected with reasonable certainty.

A wrong in the secretion of cerumen is a very frequent cause of partial deafness, and many aural unpleasantnesses. It is surely well to know this, and by a careful examination determine the character of the disease—whether in excess, defect or perversion—and also the condition of the secreting structures as it regards increased excitation or atony. With such knowledge as may be readily obtained by any one, the treatment of these diseases becomes successful.

The principal object in the consideration of these secretions is to call attention to the necessity of constantly keeping our physiological knowledge well in hand, and directing attention first to the use, that we may be able to understand the disease. If at any

time we forget this, and take the ordinary writers on pathology and therapeutics as authority, we are quite sure to go astray.

The *excrementitious* secretions are four in number—the lungs, the skin, the kidneys and the bowels—and these remove the waste of the body. The due performance of the function of excretion is essential to health, and in disease we invariably find a lesion of one or more. If the excretions are in excess, debility is the result, and becomes a prominent symptom. If they are in defect, materials which should be removed, are retained within the body; the result being irritation or oppression, according to the character of the material, and the amount retained.

Excretion by the lungs is but little studied, and yet this is one of the most important of the excretions, being to the extent of 517 grains of carbonic acid per hour. In a rough estimate the value of these excretions may be written—lungs eight, kidneys two, skin and bowels each one. True it is carbon which is thus excreted by the lungs, (this being regarded in the olden-time as the special province of the liver), but a simple experiment in closing the mouth and nose of an animal will show that it will kill in a very few moments.

Excretion by the lungs may be in excess, and this will be seen by the vivid redness of the blood where it reaches the surface, by the frequent full respirations, an exalted circulation, an excited nervous system, a high range of temperature, and rapid waste of tissues. We find these evidences of excess both in acute and chronic disease, and it must be evident to the reader that means to check it will be of value in both cases.

Such a remedy as *Veratrum*, and to a less extent

Lycopus, *Cactus*, *Sticta*, must prove of great value in such cases, associated with such local and topical applications as relieve irritation and give rest. The reader will see very clearly that in the early stage of pneumonia with such symptoms, *Veratrum* and a mush-jacket may prove speedily curative, and that in some cases of phthisis, *Veratrum* becomes a prominent remedy.

Defect in excretion from the lungs will be known by the darker color of the blood where it comes to the surface, the evident defect in the movements of the chest, fullness of superficial veins, and the oppression of all the functions from retention of carbonic acid gas.

At once our attention is directed to such remedies as prove excitant to this function, as *Nux*, if there is deficient spinal innervation, *Phosphorus*, *Arsenic*, *Lobelia*, *Bryonia*, *Drosera*, *Apocynum*, etc. If by these means, excretion of carbonic acid can be increased, the various functions of life are relieved from oppression.

Even if this knowledge did not point us to special remedies, it would be valuable as suggesting a proper hygiene. The patient suffering from excess wants quiet and rest, a moist atmosphere, and one not stimulant. The patient suffering from defect requires such exertion as will call into action the respiratory apparatus, a dry atmosphere, and one which is stimulating. Proper direction in these regards may be the one thing necessary to recovery, and we can only give such advice when we thoroughly understand our case.

The attention of physicians has been specially directed to the skin, kidneys and the bowels, as the apparatus of excretion, the importance of this function to health, and as a cause of disease. Indeed they have

received too much attention (such as is) for three-fourths of the *Materia Medica* has for its object an action on these emunctories. If we should take away from the *regular* physician his cathartics, diaphoretics and diuretics, he would be poor (for harm) indeed. Whilst I do not wish to depreciate these functions, either in health or disease, I think a much more careful study should be made of them, and that their therapeutics should be improved.

This fact should be especially learned—that in a large majority of cases wrongs of excretion are dependent upon changes in general conditions of life—the circulation, temperature and innervation—and that when these are corrected, the excretions resume their normal condition. Even when the function is not restored, very simple means are usually all that is required.

Excess in secretion from the skin is readily determined by its moisture to the touch, dampness of the clothing, as well as by the patient's sensations. The questions that follow are—is it from excitation, or is it a result of debility? It rarely results from excitation in disease, though once in a while from increased circulation to the skin, as in some cases of rheumatism, and in the so-called sweating fever, and some other anomalous cases, this will be found to be the case. Here the diagnosis is quite clear—the skin has an active circulation, is deepened in color, and the temperature is increased. The increased perspiration of debility is not secretion, but an exudation of water, washing away a small quantity of albuminoid materials. The condition is determined by the evident relaxation and loss of tone to the touch, the pallor, and usually the want of sensitiveness.

Evidently the treatment will be different in the two cases. The one of excitation requires the special sedatives, Aconite, Veratrum, Gelseminum, or special remedies influencing the sympathetic nervous system as the Rhus, Lycopus, etc. We want to relieve the undue excitation of the skin, and this accomplished the sweating ceases. In the other case an opposite treatment is required. Here we select such remedies as stimulate the skin—stimulant diaphoretics—Serpentaria, Senega, Erigeron, Erethites, Polygonum, etc. Or stimulants to the circulation and innervation, as Belladonna, Lobelia, Ipecac, Bryonia, etc. Local means will vary just as much, in the one case being sedative, in the other stimulant.

Defect in secretion may usually be known by examining the skin, which in one class of cases gives the hand a sense of dryness and constriction, and in another dryness with want of elasticity and life. The symptoms produced by retention of this excretion, are first of oppression, terminating in chill, and second of excitation, giving the phenomena of fever. As will be seen, the general symptoms are somewhat indefinite, for both the oppression and stimulation may be the result of other causes. It is well to give due weight to this lesion, though we may not rest our entire practice upon it.

If the defect in secretion is due to an increased circulation and temperature, means to rectify these wrongs will stand first. In a majority of cases of fever and inflammation, a right use of the special sedatives and proper baths will place the skin in such condition that it will resume its function ; or that it can be called into action by very simple remedies. * In other cases, where

the wrong of circulation, temperature and innervation is based upon other special lesions, the use of the *special* remedy for this, is followed by a return of normal circulation, temperature and secretion. A marked example of this will have been seen in the administration of Tincture of Muriate of Iron in some cases of erysipelas, as well as in the use of Rhus, when specially indicated.

If the defect is due to a want of excitation in the cutaneous nerves and circulation, remedies are employed which exert a stimulant influence upon the skin. Many diaphoretics owe their power to influence this secretion to their stimulant influence, and of course they can be beneficial only when a correct diagnosis is made, and they are rightly used.

Perversions of this secretion are not uncommon, but owing to our imperfect means of diagnosis are rarely recognized. "This fluid, (sweat), as it collects in drops on the skin of one perspiring, is colorless, tastes salty, has a peculiar odor, is poor in solid constituents, and, when recent, always reddens litmus." Yet we find in disease that it has color, sometimes to the extent of coloring the clothing, varying in shade and intensity; has a variety of tastes, sweet, sour, acrid; is rich in albuminoid elements; and is sometimes neutral to test paper, and in other cases will change red litmus blue. Evidently here is a field that will repay investigation. Authorities upon skin diseases have recognized the fact, that perversion of the secretion may be a cause of some of these, and may perpetuate the most intractable.

In so far as we know now treatment will be directed to the physical condition of this organ, as shown by

examination, and to lesions of the blood. The last are sometimes very important, for so long as there is in this fluid morbid material that is excreted by the skin, so long will the skin suffer.

Before leaving this subject, I wish to call the reader's attention to the character of normal cutaneous secretion, and to the fact, that in so far as it is a secretion it is effected by secreting cells. In its normal state the skin has a uniform temperature slightly below that of the blood, gives to the hand a pleasant sensation of softness and elasticity, is not damp and moist, indeed rarely shows moisture upon the surface except on increase of temperature and exertion. As this is the condition in which it does the best work, it is the condition we wish to obtain in disease. Many act as if they supposed secretion from the skin necessitated the pouring out of an increased quantity of fluids upon the surface, as from the old class of sudorifics. Yet in practice we find that the soft and but slightly moist skin is the best evidence of secretion.

We have already studied the urine as an index to disease and a means of diagnosis, and it will only be necessary here to notice a few of the more salient features connected with this study. Whilst the physician is aware that the secretion of urine is indispensable to life, in that it removes the largest portion of the nitrogenized waste, he finds the common means of diagnosis so defective, that he takes it for granted that the kidneys are doing their work right, because in a very large percentage of cases, they do their work right. As a matter of form he will ask—"how is your urine?" and in the olden time he might examine a mixture of urine and fæces in the chamber utensil. If the patient

complained of scanty urine, it might mean something, if there was uneasiness in voiding it, there was probably something wrong, and if there was arrest, very surely something must be done. But just what that something should be, was not so definite, only that it must be drawn from the class diuretics, and was usually the favorite prescription.

In this study it would be well for us first, to see *why* in any case the urine should receive a special examination, and then how this examination should be conducted. We take it for granted that in ordinary practice examinations of urine will not be made.

In acute disease retention of the elements of the urine are so clearly shown by the nervous system, that there can hardly be a failure to have our attention directed to them. The first influence is that of *excitation*—the patient becomes restless and irritable and suffers more than the condition of disease will account for. The second influence is of oppression—the patient becomes dull and lethargic, and finally sinks into coma. Of course we may have cerebral excitation and coma, without any wrong of the urinary secretion, but we never fail in these cases to make diligent inquiry, and satisfy ourselves as to the source of the nervous lesions.

Now scanty urine has a definite meaning, as has unpleasant sensations in its passage, or a failure to pass it, or going further, we may make a critical examination of it, as heretofore named. I do not wish to be understood as saying that inquiries with regard to the urine need not be made unless there is nervous disturbance, for there can be no harm in thorough examinations in all directions—but I desire to impress it

upon the mind of the reader that these are the cases where such examination is imperative.

But finding a failure upon the part of the kidneys to do their work, we are not yet ready to say—give “diuretics.” We want to know the condition of the kidneys as regards their circulation and innervation. Such arrest may result from irritation and determination of blood, and any excitant may so increase this as to entirely suppress the secretion and cause death. Or it may result from capillary congestion, which the ordinary diuretics would increase, and thus death might result from the use of remedies which in ordinary cases would increase secretion.

The condition of the kidneys may be determined in part from the patient's sensations, and in part from a personal examination. In irritation with determination of blood (active condition) the patient will have a sense of constriction in the loins with tensive or drawing pain, sometimes seeming to be in the spine. Sometimes the sense of irritation extends to the bladder, the urethra, the testes, and even to the rectum. In irritation the patient is restless, quick in his movements, the eyes are bright, the tissues around them seemingly contracted, the tongue small and pointed, and the pulse small, wiry, or vibratile. In congestion the patient complains of a sense of fullness and weight in the loins, and sometimes the same sense of fullness and weight in the pelvis. The patient is dull and apathetic, the eye dull, the face expressionless, the tongue somewhat full, and the pulse lacks sharpness in the wave—oppressed.

Such diagnosis is of especial value, because it enables the practitioner to select his remedies with cer-

tainty. If we have the condition of irritation, we give *Gelseminum*, with or without the sedatives, as may be indicated. If there is the condition of congestion we give *Belladonna*, *Ergot*, or *Solanum*, with or without *Aconite* as the sedative. Diuretics are not given until there is marked relief, and secretion has become more free; indeed, sometimes they will not be required at all. When we do give them, they are selected with reference to the condition of the kidneys—sedative diuretics for the condition of irritation, stimulant diuretics for that of congestion.

Excess in this secretion is not of frequent occurrence, and is usually recognized without trouble. The large amount of urine in diabetes, insipidus and mellitus, attracts the patient's attention, and is evidence to the physician of the nature of the wrong. But there are a few other cases in which the excess is not marked in this way—the patient passing but the usual amount of urine, or possibly it is less in volume than usual. It is only when tested with the urinometer that it is found continuously of high specific gravity, and that the solids are increased from one-tenth to possibly one-fourth more, and still it does not contain sugar or albumen. Such excess will be marked by loss of flesh and strength, and by feelings of weight and dragging in loins or pelvis.

The wrong may be wholly due to a lesion of the kidneys, or principally to an excess in retrograde metamorphosis. This of course must be determined to give us a rational treatment.

Attention is rarely called to lesions of *perversion* by the common examinations of the urine. Of course there are exceptional cases, as the excess of urine in

diabetes mellitus, and urinary irritation in some cases of deposit, in which the direct symptoms are sufficient to excite attention. In the majority, the diagnosis is made by exclusion. There is an impairment of the health; object—to locate and determine the character of the lesion. And thus we give the patient a thorough examination, with reference to the more important functions and organs. Is it of the circulation, digestion, respiration, innervation, nutrition, secretion of skin, bowels, *kidneys*? Thus excluding one after the other, as we find them free from disease, we at last reach the affected part. Even now we do not know the character of the lesion, and proceed by the same method to determine it. Is there sugar in the urine, albumen, blood, the phosphates, or some of the rarer morbid materials? The general symptoms may point us to the special examination, or we may be obliged to make test after test, until we determine what the real trouble is.

But having learned the character of the perversion, we are not yet ready for treatment. It will not do to say, here is a remedy for all cases of diabetes mellitus, albumen blood, deposit of the triple phosphates. The examination must go a step further—to what extent is it a lesion of the kidneys, or of some other part, the blood, nervous system, or the associate secretions from lungs, skin and bowels? and still a step further, we want to know the physical condition of the kidneys, and the special character of any other wrong.

The reader may say these methods are very complex, and it will be difficult for one to follow them out (?) I admit it, and whenever possible, should rather prescribe from a single characteristic symptom, but

there are cases that require just such thorough analysis to give successful treatment.

When we study excretion from the bowels, we want first to correct our physiological ideas of the value of the secretion. Physicians have made a hobby of the bowels and have ridden millions of them to untimely graves. We want to know if bowels were made to be continuously physicked? and whether good or harm is most likely to result from the common use of purgatives? If we consult Lehman again, (a most excellent authority), we find that—"The contents of the intestines, even after the use of tolerably simple articles of diet, consist of a mixture of undigested, indigestible, and already changed or decomposed substances, with which are mingled constituents, partly undecomposed, partly already metamorphosed, of the digestive fluids." But of a real secretion eliminated by the glandulæ of the intestine the fæces contain but a small proportion—probably less than the excretion from the skin.

Excess is usually associated with frequent fluid evacuations—diarrhœa—yet we must not take it for granted that in all cases of diarrhœa there is excess. Excessive discharges of fæces produce debility, first by the removal of some portions of the food, and secondly by withdrawing some of the albuminoid materials of the blood.

Constipation is not to be regarded as positive evidence of *defect* in secretion from the bowels, as it is possible, and not uncommon, for constipation to exist for days, and yet excretion goes on into the bowels as before. But even constipation may be a cause of disease, either from irritation produced by the debris of digestion, or by the decomposition of some of the

material, or by the generation of offensive gases, or the absorption of some of the decomposed matters. Evidences of irritation, or of oppression, when they can be referred directly to inaction of the bowels, may be regarded as an indication for the simpler cathartics. The more harsh remedies of this class have usually been used for their derivative effect, and the saline hydragogue cathartics to deplete the blood-vessels of fluid.

Small doses of some of the cathartics, as Podophyllum, Apocynum, etc., do increase the secernent function of the intestine, and at the same time improve its function of digestion. The dose is less than that required for catharsis, and the indications are sensations of fullness, weight and atony.

Perversions of the secretions of the bowels and accessory glands are recognized principally by changes in color and in odor, but these are not as certain as would be thought at first sight. The reasons are clear—there is so much and varied coloring material taken with the ingesta, and the odor naturally intense and foul is so readily changed by decomposition of fæcal material. Still it is well to make the fæces yield all the information possible.

A few examples may be given in illustration. The vivid green discharges of childhood, acrid and irritating, give information of excess of acid, and suggest the use of alkalies. The extreme yellow (chrome) of infantile discharges, evidence an insufficient digestion of the food, both of albuminoid material and fat, and suggest more care in diet, and the use of remedies that give tone to the digestive apparatus. The *clay-colored* evacuations of disease tell of want of secretion from all

the intestinal glands (liver included), of impaired power of digestion, and suggest the use of stimulants to the upper intestinal canal and associate viscera. The yellow *rye-mush* fæces of typhoid fever is characteristic, and calls our attention to commencing disease of Peyer's glands. The deep brown or black fæces, with greenish tinge, sometimes yeasty, is one of the most marked indications of the *typhoid* condition, and calls attention to the necessity of antiseptics. The color and physical properties of mucus, pus and blood, are readily recognized, and either by their quantity, condition, or some local symptoms, their source may be readily detected.

THE BLOOD.

The study of the blood is one of much interest to the physician, for in changes of its structure and circulation we find a principal element in many diseases. The old Hebrew poet well remarked that—"the blood is the life of the man," at least we find by experience that wrongs of the blood are manifested by impairment of the life. We study both the lesions of the blood and the lesions of its circulation, and it is well to keep them separate in the mind.

Excess in the amount of blood is of very rare occurrence as a cause of disease, and yet occasionally we meet with cases in which, from local disease, the high stimulus of a large amount of rich blood is injurious. We find such cases in local disease of the kidneys, the lungs, the heart, the brain, in which these organs, enfeebled by disease, can not bear the strain of such vigorous life. This has been named *sthenic plethora*.

There is another condition in which a large amount of blood is continuously made, but owing to exhaustion of the circulatory apparatus and nervous system by excesses, its circulation is sluggish.

Excess of blood is readily recognized by the fullness of the blood vessels, especially of the capillary system of the surface, which shows the deep tint of abundant red globules, by the full firm tissues, and the vigorous performance of function. Asthenic plethora will be recognized by fullness of blood vessels, oppression in the stroke of the pulse, and a turgid venous circulation, giving the surface the peculiar color of venous blood. The color is so characteristic, that when associated with the full animalized tissues, and the full blood vessels, there can be no mistake in the diagnosis.

When high stimulus is likely to be a source of danger, we take measures to lessen the quantity of the blood. The safest means is to diminish the supply of food to a minimum, and select such vegetables and fruits as yield small proportions of nitrogenized material. In some cases the saline purgatives and diuretics may be employed to a limited extent with advantage, which, with well regulated exercise, will remove the source of danger. Many a man has lost his life because his digestive and blood-making organs were so much better than the remainder of his body, that they have furnished the material for a too active life. In asthenic plethora the important remedy is *right* living. Cut off the supply of stimulant drinks and food, establish good excretion, and have the patient take such exercise as will promote a more rapid combustion and waste of effete material, and in a few months the patient will be on safe ground.

Defect in the quantity of the blood—*anæmia*—is readily recognized by the want of color of surface, and the loss of that hardness and elasticity of tissue that we call *tone*, and a loss of size and functional activity of the soft structures of the body. "As the life of the man is his blood," we have a loss of life in proportion to the condition of *anæmia*.

But we may have gone so far in our diagnosis as to determine absolutely that there is a want of blood, and yet not be ready to make a prescription. It will not do to say, give Iron, or give "Bitter Tonics and Iron." We want to know why a sufficient amount of blood is not made, or why, if made, it is not applied to its proper use—nutrition. In one case it will be a want of proper food, or of some special element of the blood, in another a want of buccal, gastric or intestinal digestion, in another a wrong in the blood-making organs, in another a lesion of the circulation, in another a lesion of innervation, in another a lesion of retrograde metamorphosis or excretion. Is it too much to ask that each of these receive due consideration, and that our prescription should be directed to the special fault? It requires a little time to pass all this in review, but the mind works very rapidly, and taught to work right, it will do all of this automatically.

Of course the treatment of *anæmia* must vary in different cases, as the cause of it varies so much. In one case good food, well prepared, is all sufficient; in another some special element of blood needs to be added—as Iron, Phosphorus, Soda, Potash, etc.; in another the digestive apparatus requires stimulation; in another special stimulants are required to increase sympathetic innervation; in another special means to give

a right circulation and temperature; in another stimulants to the formative cells by remedies and exercise; and in others still the cure comes from stimulating the processes of waste and excretion, thus getting rid of old and feeble forms.

The consideration of *spanhæmia*, or poor blood, is hardly necessary here, because it is included in the general term anæmia. Whilst it is possible to have a normal amount of blood, yet poor in some of its elements, this is a rather rare condition. It will be known by the full, limp, inactive tissues, the full, blue veins, the full pulse without power in its stroke, and the tendency to dropsical effusions. It is really a worse condition than a simple anæmia, and requires more care in its treatment. As we employ means to increase the formation of blood, and add those elements necessary to its proper structure, we at the same time wish to get rid of the old stock, and the safest way to do this is by well regulated exercise and gentle stimulation of the apparatus of excretion.

As remarked under the head of anæmia, special consideration is always given to a want of some of the elements of blood, and to the means which will restore them. This is the basis of the treatment called *restorative*. If the blood requires Phosphorus, it will not do to give it Iron, as when it requires Iron it will not do to give it Sulphur or a bitter. The special symptoms heretofore named, showing these defects, should be closely studied.

But the blood may be *bad*, or changes may be going on within it which will work its destruction. You may say that "bad blood" is a popular myth, and does well enough to base a nostrum advertisement upon, but

it will hardly do for specific medication (?) There you are wrong, for "bad blood" is a real, tangible entity, with definite expressions, and a definite therapeutics. How will we recognize it? Assuredly in the ordinary way, by an inspection of it where it shows at the surface, by any material (secretion) that is drawn from it, and by wrongs in the nutritive function which is based upon it. When you think of these methods for a moment you will see that they have a physiological basis, are plain, and eminently practical.

In acute disease we are more interested in those changes going on in the blood which we call septic, than in any special material contained within it, and these changes are more readily recognized by exudations than other means. Attention has already been called to the secretions and deposits upon the tongue, as evidencing the condition of the blood. We find that all exudations that might be called *dirty*, and all changes in color toward brown and black, might be regarded as certain evidence of sepsis, and of the impairment of the blood. We put the proposition in this form—"as are the secretions of the mouth (notably the coating of the tongue) *dirty or of deep color*, so is the intensity of sepsis, and the death of the blood." In so far as the term *typhoid* is applicable to sepsis, these symptoms are among the most prominent in typhoid diseases.

Any exudation will serve to show the character of the blood as well as the coating upon the tongue. The discharges from the bowels and of urine, the sputa in disease of the respiratory apparatus, the lochia in puerperal disease, the "washings-of-meat" discharges in dysentery, the secretions of an ulcer, the sanies of an injury or surgical operation, all tell the story explicitly.

It is not possible to get a good secretion or exudation from septic blood, and the character of the one will show the condition of the other

In some forms of chronic disease there is effete or imperfectly elaborated albuminoid material in the blood in considerable quantity. It serves to lower the character of this fluid, and to impair all vital activities, and by influencing the nutrition of structures it gives rise to local disease. This *bad* blood has been a basis for the administration of the various compounds called alterative, so extensively employed by the profession, and also for nostrum venders, and no doubt the treatment adopted, by increasing waste and nutrition, has cured many cases.

The evidence of *bad* blood is best found in wrongs of excretion and of nutrition. There can not be a wrong of this character without an effort upon the part of the skin, kidneys and bowels to remove the unpleasant material, and we will usually find that all three of these emunctories show a lesion caused by the effort, though one may suffer more than another. In the case of the skin it manifests itself in cutaneous disease, taking the forms of the exanthemata in the simpler cases, and the graver forms of the pustulæ, squamæ and tuberculæ, when the lesion is more persistent and severe. This fact has long been recognized, in so far as the treatment of skin diseases has embraced means for removing effete and unpleasant materials from the blood.

We frequently hear it remarked, "I know my blood is bad, because my flesh does not heal easily, and wounds and scratches inflame and suppurate." True there is something wrong here, and it may be "bad blood," according to our definition above. At least in

a large number of cases, a treatment that looks to the increase of excretion, and better digestion and blood-making, removes all the unpleasantness. In the remaining cases some special material of the blood is wanting, frequently Lime, sometimes Soda, Potash, Phosphorus, etc.

In some cases the urinary apparatus is the special seat of suffering. The entire apparatus is irritable, and the urine contains an abundance of ammoniacal compounds, and gives characteristic deposits. The effort at removal may be continued by these organs, until severe disease is induced, as seen in some cases of chronic inflammation, and an occasional case of degeneration. The bowels always suffer more or less, indeed I hardly think it possible that this condition should continue long, without a loss of regularity in defecation, and a change in the character of the stools.

The lesions of nutrition may take the form of degeneration, or of deposits. In the one case we have the symptoms heretofore described, of enfeebled function, and a want of expression in the soft tissues. In the other comes the evidence of local disease, enlargement preceding inflammatory action, which runs a very irregular course. The last is so important an evidence that it is well to read it over. Whenever swelling and change in the form and functions of a part precede inflammatory action, there is a wrong of the blood, and means must be employed to remove the unpleasant material by excretion, and to provide for better blood-making.

In place of thinking of certain remedies called "alterative," which act in "an insensible and inexplicable manner," it is best to think of the process of cure.

The *bad* material is to be removed, and *good* material is to be introduced in its place. We wish to know whether it is necessary to employ means to stimulate retrograde metamorphosis, by exercise or medicines, to increase the processes of combustion, to employ remedies that modify and arrest the septic processes, or to use such as increase excretion. It is possible that the habits and surroundings of the patient must be changed before a cure is effected, or that he should have better food, better digestion, or better blood-making. In thus getting a better blood, there is less tendency to depravation.

THE CIRCULATION OF THE BLOOD.

Among the most common lesions in disease are wrongs of the circulation of the blood. We may state it as an axiom that the condition of health requires a circulation normal in time and character, and just in proportion as we have a change from this normal standard we have severity of disease. The time of the pulse varies greatly in different individuals in a state of health, in the adult having a range of from 50 to 90 beats per minute, yet in its other characteristics it is pretty uniform, and can hardly be mistaken. The finger on the pulse is trained to determine lesions of the circulation, and should rarely make any mistake.

The wrongs of the circulation may be general or local, and classified under the three heads, excess, defect and perversion. The first has reference to rapidity, the second to an impairment or checking of the circulation, and the third may embrace cases in which the circulation is not uniform, or is irregular.

Increased frequency of pulse is one of the characteristic symptoms of fever, and is usually associated with a proportionate increase of temperature. As a rule we estimate that ten pulsations represent 1° of temperature—that is for each degree of increased temperature we may expect to find an increase of ten pulsations per minute. There are many exceptions to this rule, the increased frequency of pulse being sometimes more, sometimes less, and indeed sometimes showing but little relation. As a rule, increased frequency of pulse represents gravity of disease, and we are accustomed to think of it as an unpleasant symptom. As is the frequency of the pulse, so is the arrest of secretion, the increase of heat, the impairment of digestion and blood-making, the arrest of nutrition, the development and progress of sepsis, the progress of inflammatory disease, and the danger to life, local and general. Hence the importance of means which influence the circulation, reducing its frequency without impairing its freedom.

FREQUENCY OF PULSE may be the basis of fever or inflammation, and when the pulse is brought down to a normal standard all the other phenomena of disease may disappear. Thus we often observe under the influence of the special sedatives, that as the frequency of pulse is reduced, the temperature falls, the nervous system is relieved, the skin softens and becomes moist, the urine is increased, the bowels move of themselves, and the appetite returns. Or, in case of inflammation, the pain ceases, there is less heat, redness and swelling, and resolution rapidly progresses to complete restoration. These results are so common, that we are surprised in some seasons and in some cases to find that the sedatives do not seem to produce sedation.

This brings up the important point in the study of disease—that there is a *first* and predominant wrong upon which the entire morbid process rests. In some cases, as in the instances given, this is so markedly the case that when we have removed this, the whole disease rapidly fades away. But in others this simply paves the way for the doing of something else, and this again for the restoration of other functions, and thus a succession of means may be required in a single case.

It will not do to say here, I have frequency of pulse, and my patient requires a sedative, taking any one of this class at random. The ten or a dozen remedies grouped under this head are not alike, and can not be used one for the other. It is true that we may so substitute Veratrum and Aconite in many cases, but even these had better be given according to the special indications heretofore named—Veratrum when the pulse is full, Aconite when it is small. Then we have Digitalis when the impulse is feeble, Lobelia when it is oppressed and the artery is turgid with blood, Gelsemium when it is full and vibratile, Belladonna when it is full, soft, and without strength, etc. For these indications and others, the reader is referred to a former consideration of the pulse as an element of diagnosis.

SLOWNESS OF PULSE is not a common symptom in disease, but is occasionally met with in chronic disease. It indicates a want of innervation, or excitability of parts supplied from the sympathetic. The wrong may be found in degeneration of tissue, or simply a want of waste and nutrition, the tissues becoming old and inactive. In some cases the pulse will be slow when the patient has remained quiet for some time, but is increased in frequency upon exertion.

These cases will be benefited by the use of small doses of Lobelia, Digitalis, or Ergot, with the use of means to stimulate increased waste and nutrition.

Changes in the character of the pulse are of very frequent occurrence, and many of them have already been named in connection with special remedies. In most severe diseases change in the character of the pulse will be found associated with frequency, and will probably point out the sedative which will be found most useful. As heretofore stated, our examination of the pulse has reference to size, the movement of the mass of the blood, the impulse of the wave, its length, general character and termination, and the inter wave-current. A reference to any sphygmographic illustrations will show that there is very great variation in all of these, and that they do represent definite pathological conditions.

Irregular distribution of blood is frequently met with in disease, and a popular expression in treatment is, "equalize the circulation." Some have laughed at the expression as being indefinite, unscientific, and partaking of the character of "old women's" medicine. But there is no plainer pathological fact than that the circulation of blood is unequal in many instances—here too much blood, there too little—a want of circulation to the extremities and surface, too much blood in the cavities of the body. That such inequality is the cause of disease is very easily shown by many examples. Every one will recollect the cold feet and chilled surface that attends an ordinary bad cold, and will recall the local and general wrong that comes from a similar condition at the period of the menstrual flow, very greatly increased by the local stasis of blood in the

uterus if the flow should be stopped. Many can recall cases of chronic disease, associated with cold feet and a tendency to chilliness of the surface from imperfect circulation, and they will recollect that such cases were very intractable. Some will recall cases of pneumonia or of typhoid fever, in which an irregularity of the circulation, and a tendency to accumulation of blood in the cavities, and a want of blood to extremities and surface were prominent features, and they will recall the gravity of such cases.

As the mind recalls these well-known facts, the importance of equalizing the circulation will be seen. If in the commencement of a cold, means are employed to give an equally vigorous circulation to surface and extremities, the mucous membranes cease to suffer. If in chronic disease we so improve the circulation that all parts receive an equal quantity of blood, we have accomplished one of the essential things necessary to recovery. If in severe local disease, or the graver acute affections called typhoid, we find an irregular distribution of blood and heat, getting well will probably depend upon our ability to rectify this wrong.

THE LOCAL LESIONS OF THE CIRCULATION that interest us most are embraced under the head of hyperæmia, or an excess of blood in a part. This has special reference to the capillary circulation, though arteries and veins are involved to a limited extent. The condition of local hyperæmia is easily understood and recognized. In health the mass of capillaries are not full, indeed it is impossible that they should be full at once. If there is an increased amount of blood in a part, with its motion unchanged, there will be increase of size—swell-

ing—redness, if the part is superficial, and increase of temperature and sensitiveness.

Whilst it is possible to have the condition above named, it is uncommon. As a rule there is a change in the rapidity of the circulation as well. Thus we divide hyperæmia into two varieties, active and passive—in the one there is excess of blood in a part with its movement increased, and in the other excess of blood in a part with its movement diminished. We call the first determination of blood, and the second congestion. It will not do to mistake these pathological conditions, as the treatment of one is almost the opposite of that of the other.

The cause of determination of blood is *one*—irritation—*ubi irritatio ibi fluxus*; and the condition of the part is one of excitation. The symptoms are very clear—there is swelling, heat, increased sensitiveness, and redness. In minor degree the functional activity of organs and parts is increased; but when in excess, though the part is excited, the function is diminished.

If now we compare with this the condition of the capillary circulation in congestion, we will see that there is much difference. In this the capillaries are filled with blood, but the movement of the blood is sluggish, or entirely arrested in some vessels. The active life of the part is impaired to the extent of the impairment in the circulation, and all the expressions show dullness and want of functional activity.

Whilst there was but one cause for determination of blood, in congestion we may have three. The principal one of these is an impairment of the life of the part—the structures being enfeebled the capillaries yield to the *vis a tergo* of the blood. In some cases an irritation

of the part is a first cause, determining a greater amount of blood to it than its weakened vessels can withstand. In other cases an obstruction to the return current by way of the veins, is a principal cause.

As before named, the symptoms are all of impaired function and oppression, and when we compare this with the excitation of the active state of determination of blood, the distinction will be clear. We say that the sensations are of fullness, weight, dullness, and if there is pain it will partake of these characters. The objective symptoms when near the surface are of swelling, and an increased redness that has not the brightness of the active circulation; the temperature may or may not be increased.

If we take some examples of the two conditions, the subject may be clearer. In determination to the brain, there is a flushed face (bright), bright eyes, contracted pupils, increased temperature, and excitation of function—the patient being excited, restless and sleepless. In congestion the face is usually flushed (dusky, purplish or livid), the eyes are dull, pupils dilated or immobile, the mind is sluggish and the patient inclined to coma. If we take the lungs, we find in determination a rapid, uneasy respiration, characterized by quick movements of the walls of the chest, and the patient shows the excitation in the sharp, forcible cough, and frequent change of position to get relief. The functional activity of the lungs being increased, the color of the blood when it reaches the surface is brighter than usual, and the surface is therefore flushed. In congestion, the movement of the chest is sluggish, labored and oppressed, and the cough has a like dull and oppressed character. The function of the lungs being diminished

the surface is inclined to be dull, dusky, or livid. If we take a diarrhœa as an example, the symptoms are quite as clear. With determination of blood, there is marked uneasiness, and the evacuations are unpleasant or possibly painful, and attended with some tenesmus. From congestion, the bowels are tumid, have a sensation of weight and fullness, and the discharges are free and without uneasiness.

Whenever we find these two conditions, the symptoms will have the same character, and will be shown by the sensations, and by the function of the part. In determination there is the feeling of increased activity, and in congestion the feeling of impaired activity; in determination there is excited function, in congestion impairment of function.

As the cause of determination is irritation of the part, any agent which will remove this irritation becomes a remedy. As the circulation in its entirety is controlled by a system of nerves, a lesion of a part may sometimes be best relieved by an action upon the whole through the sympathetic. Determination of blood to any part may be relieved by the use of *Veratrum*, *Aconite* and *Gelseminum*. Other than these general remedies, we select those that influence the special part affected, and that remove irritation. In determination to the brain we use *Gelseminum*; to the lungs *Veratrum* or *Ipecac*; to the kidneys *Gelseminum*; to the bladder *Eryngium*; to the bowels *Aconite* and *Ipecac*; to the uterus *Aconite* and *Macrotys*. In so far as we use local applications they are selected in the same way: wet packs, poultices, fomentations, enemata, inhalations, etc., are selected with reference to their sedative character.

In congestion the part requires stimulation, especially stimulation through the sympathetic. It may also be influenced to a greater or less extent by remedies stimulating the circulation at large. Thus Belladonna, Lobelia, and to some extent Aconite, are of value in all cases of congestion. Other remedies are selected with reference to their action upon the part, as stimulants or excitants. In congestion of the brain we use Belladonna; in congestion of the lungs or of the heart, Lobelia; in congestion of the abdominal viscera, Nux Vomica; in congestion of the kidneys, Belladonna, etc. In selecting local applications we observe the same rule; whatever their form, they should be excitant to the part. In studying the action of remedies, we first wish to know where they act, and second the kind of action. If a part is diseased, we wish a remedy that acts upon that part particularly, and which does that which is necessary to restore it to health. In the case of determination of blood—the active circulation—we want a remedy that will remove irritation, and the undue excitation of its circulation; in congestion we want a remedy that will increase the life of a part, or that will give the necessary stimulus to the capillary vessels.

According to Dr. Williams, inflammation is a local hyperæmia, with the movement of the blood partly increased and partly diminished. We study this process of disease, with reference to its cause, the lesion of the circulation, the exudation, and the result or termination. The cause is one, irritation with such impairment of vegetative life. From the irritation comes an increased circulation to the part, the capillaries are filled with blood, which in some moves slower and slower, until the circulation through them is arrested; and yet

in others the movement of the blood still continues rapid. As the capillaries lose their strength and become thus filled, the fluid portion of the blood is exuded into the intercapillary spaces, or upon free surfaces. This completes the pathological process, and we next study its result upon the life of the part. If the original lesion has not impaired the vegetative life too much, or the lesion of the circulation has not been too great, we find that after a time these minute vessels regain their tone, and the circulation is re-established in them. As the current of blood commences to flow through them, the material exuded is drawn into the current and carried away, thus leaving the part in its original condition. This termination is called "resolution," and is the result most to be desired in all cases. But if the life of the part be so impaired by the cause, that it can not renew itself; or if the impairment of the circulation be so great as prevent its receiving the necessary amount of oxygen, and the removal of carbonic acid gas, then it must die and be removed. This death and removal takes place in two ways—by suppuration, and by gangrene or mortification. In suppuration the process of death is modified by a lower form of life—the production of pus-cells, from the formative cells of the part, and thus the remainder of the body is protected in part, and repair facilitated. But if the impairment of life is greater than this, the part dies, and is removed *en masse*, by the suppurative process when the tissues still retain sufficient life.

The symptoms of inflammation, according to the old authorities, are pain, heat, swelling and redness, and for superficial parts these are characteristic and definite, but for internal and concealed parts we are obliged to

rely upon the first, and the evidences of impaired function, and the influence upon the general health.

Pain is a very constant expression of inflammation, though it is very common from other causes. It varies from simple uneasiness from over-excitation, to the sharpest and most severe suffering, and its intensity is not to be taken as the measure of inflammatory action in any case. It becomes symptomatic of inflammation only when there is evidence of a wrong circulation, and increase of temperature, general or local.

Heat is a constant symptom, and much more reliable than pain. It may be but local in superficial inflammation, or when but a small and unimportant part is affected, but is general when an important part or much tissue is involved. In some cases the patient's sense of heat may be taken as evidence, though this is very liable to error. As a rule the temperature of an inflamed part will not rise higher than 102° , unless there is a corresponding elevation in the temperature of the body, and there is rarely more than one or two degrees difference between the general and local temperature. The sense of heat, when the hand is placed upon a superficial inflammation, is due in part to arrest of secretion from the skin, which is also the cause of any difference there may be in temperature.

Swelling is also a constant symptom, though not so marked when free surfaces are involved, or very dense tissues. It is not a reliable symptom, however, for it may be due to changes in the nutrition of a part, to growths, deposits and exudations. To be of any importance in diagnosis it must be associated with evidences of derangement of the circulation, and with increased heat.

Redness is only an evidence in superficial inflammation, and is due to the presence of a large number of red globules. It is deeper than in determination of blood, though it may be simulated by some rarer conditions of the skin.

Among the prominent and most valuable symptoms of inflammation are wrongs of function; these are constant and characteristic. In the early stage of excitement the functional activity of some parts will be increased; but in a majority it simply shows excitement and is really impaired. As the capillary stasis increases, and exudation occurs, the function becomes more and more impaired, until in some cases it is completely arrested. Thus in inflammation of the brain, we have at first great mental excitement, then delirium, then probably incoherent (muttering) delirium, and finally from exudation—coma. In this case the symptoms of the first and second stages are almost opposite—active delirium and coma. In inflammation of the lungs we find at first increased activity and a rapid oxidation of the blood; but in the second stage there is oppression, and an imperfect aeration of the blood. In inflammation of the liver, there may be at first stage an increase of biliary secretion, whilst in the second there is complete arrest. So in inflammation of the kidneys, the first excitement produces increased secretion of urine, whilst the second may arrest it entirely.

The different phases of the inflammatory process and its results, require care in diagnosis. Recognizing the presence of an inflammation, we want to know the danger to the life of the part, and to the life as a whole. In this respect it may be said, that those cases of but moderate excitement are most favorable. When the

vascular and nervous excitement are extreme we may anticipate an unfavorable result, as well as when we have marked swelling and redness, with impaired sensibility and arrest of function. The sensation given to the touch will be most reliable in external inflammations; the greater the departure from the normal standard, the greater the danger to the tissues.

Suppuration is announced by an increased fullness of the tissues, a sense of increased tension, and a change in the character of the pain, which becomes throbbing. If but a moderate amount of tissue is involved in an unimportant part, suppuration is followed by relief of the general symptoms, but when considerable tissue is broken down, or important organs are involved, it is frequently ushered in with a chill, and attended by a fever having somewhat the character of hectic.

Gangrene of external parts is announced by the change in color—purplish or black—by coldness, and a want of sensibility. Internally it is announced by great prostration, the subsidence of pain, loss of sensibility, and a soft, feeble pulse.

The general symptoms are those of fever. The cause of inflammation is depressing to the life of the individual as well as to the life of the part, and when considerable structures are involved the expressions are very distinct. The first influence gives the listlessness, languor and loss of function; this culminates in a chill or rigor; and this is followed by the symptoms of febrile reaction—frequent pulse, increased temperature, arrest of secretion, and derangement of the nervous system.

In the severer cases of inflammation these general symptoms are as pronounced as in fever, and it is some-

times difficult to determine a local lesion, except by close examination and attention to special symptoms. If care is used, however, a special wrong of function will attract attention to a part or organ, and symptoms of inflammation will be detected.

The close relationship between fever and inflammation should not be forgotten, and indeed it is well in practice to recognize them as requiring the same treatment; an inflammation is fever of a part. The remedies for fever are remedies for inflammation, and in many cases they are the best and most direct we have. If, in the majority of cases, the pulse is brought down to a normal standard, the temperature reduced, innervation normal, and the secretions restored, the inflammatory process will cease, and if the life of the part has not been too much impaired, resolution will be rapidly effected.

In studying the treatment of inflammation it is well to bear in mind the different phases of the morbid process. First, irritation and determination of blood; second, impairment of capillary circulation until its final arrest, and lastly, the impairment of the life of the tissues from this and the exudation. The irritation may continue through the entire progress of the inflammation, and thus will continuously attract the blood to the part, whilst from the commencement there are marked evidences of impairment of tissue life.

Anything that will lessen or remove irritation will prove a remedy in inflammation. Take away the irritation, and you take away the cause of an excited circulation of blood to and in a part. The general means have been already referred to, but some of them are local as well. The sedatives, Veratrum and Aconite,

influence the inflammatory process directly, wherever it may be located. So do the indirect sedatives of the olden time—the nauseant emetics, and the more powerful diaphoretics.

In the selection of local means, we must closely value the inflammatory process, and determine the kind of influence most desirable. It may be directly sedative, removing irritation, and in some instances may be depressant. In others, whilst an object is to remove irritation, we also keep in view the greater necessity of stimulation to the capillary circulation. And in many we keep in view, as a principal object, such treatment as will increase the life of the tissues.

When we have determined by an examination that the inflammation must terminate in suppuration, we should not forget that resolution goes on at the same time, and that it is our business to confine the suppurative process to as small a proportion as possible, and to obtain resolution as far as is practicable. The treatment is just the same as in mortification; we wish to restrict the death to as small a portion as possible, and we do it by strengthening the life of the tissues.

The means named are those which might be embraced under the head of physiological medicine, and give us an excellent basis of treatment in many cases. In some we have special means, the action of which can not be explained in this way. These remedies are indicated by some special expression of disease, and as we have already seen, they prove curative in very diverse (seemingly) conditions of disease. I need but instance the action of Tincture of Muriate of Iron in erysipelas; the action of Rhus, Bryonia and Macrotys and some other agents in the arrest of special inflam-

mations, or the special action on individual parts or associate functions, as *Phytolacca* in mammary inflammation, or in disease arising from nursing.

INNERVATION.

We divide the nervous system into three parts, for study—the brain, the spinal cord, and sympathetic. The first is the organ of conscious life, the second of automatic movement, and the third governs and associates the functions of vegetative life. The functions of the brain are reason, emotion, volition and sensation; of the spinal cord, the co-ordination of muscular action, and the functions of respiration, defæcation and urination, and expulsion of the uterine contents; and of the sympathetic, digestion, circulation, nutrition, and secretion and excretion.

Lesions of innervation may be due to a change in the condition or structure of the nerve centres, or to some lesion external to these. The more common lesions are of the circulation, and we have them from the two opposite conditions of an excited circulation—too much blood in a part, or an enfeebled circulation—too little blood in a part. Whenever we find these lesions, this is the first question we ask, and usually the symptoms of hyperæmia or anæmia will be distinctly marked. A physiological treatment will be based upon this, to a considerable extent. If we have hyperæmia we use remedies which lessen excitation, if it is anæmia we employ such agents as stimulate and give a more vigorous circulation. In the first cases the treatment may be temporarily depressant, in the second it is always restorative and tonic.

DELIRIUM in acute disease is readily recognized. The inability to reason rightly, and the illogical and unreasonable expressions tell the story clearly. We say delirium is *active*, it is *passive*, it is coherent, it is incoherent—taking the entire range of that active continued expression, in which it is almost impossible to control the patient, to the dreamy delirium of typhoid fever, in which the patient is calm and still, or the muttering delirium that soon passes into coma.

But we are not so much interested in the expression of delirium as we are in the symptoms indicating the physical condition of the brain. We want to know whether there is an active circulation, or an enfeebled one; whether the patient can bear temporary depressants, or requires stimulants and restoratives. The practitioner will recognize the pertinence of this inquiry, as it points the way to the selection of direct remedies. In the first case we use the sedatives and associate means that relieve excitement, and the special remedy, Gelseminum. In the second we use Quinine, stimulants, restoratives, tonics and food.

It may be remarked here, that in addition to the means selected in this way, any remedy which may be indicated by special symptoms, is a remedy for delirium. Thus we see a delirium rapidly disappear under the use of an acid, an alkali, one of the antiseptics, Rhus, and other agents heretofore spoken of. The two methods may be sometimes combined; though, if the symptoms indicating a single remedy are pronounced it should be first given.

In *delirium tremens*, we also find two conditions of the brain as a basis for the wrong reason. A want of recognition of this fact has given us some queer medical

literature. For a time we will find our medical periodicals teeming with recommendations of stimulants, tonics and food as the means of cure; then for a time they will recommend a sedative and depressant treatment. It never seems to have impressed the profession that delirium tremens might arise from two opposite conditions of the brain—one in which the circulation of the organ is depressed, and the other in which it is too active—and yet this is very certainly the case.

If we find our patient with sunken eyes, blanched or livid lips, cold extremities, and a small and feeble pulse, we know that he requires stimulants, and especially food. In the early stage of such a case we would expect to arrest its progress by the stimulant action of Nux, Iodine and Hydrastis, and the use of beef-tea. We can see how it is that Capsicum in large doses should prove curative, and how small doses of Quinine, Opium and Camphor exert a beneficial influence.

But if we find him with a florid face, full, bright eyes, increased temperature, and a full, hard pulse, we recognize a condition of undue excitement, and would hardly use the treatment just named, though it has proven successful in cases of delirium tremens. On the contrary, we propose to select remedies which will remove the undue excitement of the circulation, and give rest to the brain. Thus we give full doses of Veratrum and Gelseminum, saline cathartics and diaphoretics, and possibly follow with Bromide of Potash and Chloral.

If we study puerperal mania, or acute insanity, we find two classes of cases, as in delirium tremens. In one from exhaustive discharges, lactation, and starvation (the regulation toast and tea), we have a condition of anæmia. We find the face pallid, the eyes dull, the

tongue broad and pallid, the pulse small and feeble, and the extremities cool. We at once recognize that this patient wants proper stimulants, tonics, restoratives, and food, and as we give them we find that there is a steady improvement. If we had employed the olden stereotyped treatment of purgatives and depletives, we would have had a funeral, or a case for the lunatic asylum.

But in other cases we do find a flushed face, full, bright eyes, contracted tongue, increased temperature, a full, hard pulse, and partial arrest of secretion. The case is just as clear as the first one, and we cure it by the use of the proper sedative, Gelseminum, and means which will restore secretion and excretion. In this case temporary depressants may sometimes be employed with good results.

In chronic mania, the diagnosis of the physical conditions of brain and body will be made in the usual way. All wrongs of function and structure are to be removed as far as possible, and the patient placed in the best possible health. Thus if there are special indications for any single remedy, this should be given. In some cases the action of such agents is very speedy and permanent.

With regard to the psychological treatment, but little need be said. It must be based upon this law of nature—"that in proportion as an organ or function is used it gains strength; and as it is disused it loses strength." In so far as the morbid mind has material to feed upon, and has exercise, the insanity will be increased; and in so far as the normal functions of the mind are disused, they become enfeebled. The object, therefore, is, to call out the mind in orderly channels as

much as possible, and to give as little cause for the insane manifestations as possible, that the one may gain strength and the other lose it.

What has been said with reference to reason is applicable to the emotions, in so far as the necessity of recognizing the physical lesions are concerned. Emotional wrongs have a physical basis, and if perfect health can be restored, they will pass away. Indeed, permanent cures can only be effected in this way.

The wrongs of the emotions may be in either of the three ways—excess, defect and perversion—but the first and last associated, are usually met with. The expression is so distinct that it can hardly be mistaken; too great a manifestation and rapid alternation of grief, joy, hope, fear, exaltation, depression, etc., without sufficient or corresponding cause, tells the story. Hysteria is the type of this class of diseases, though it involves other than the emotions.

A defect in volition is often noticed as an element of mental disease, and as an attendant upon some other diseases. It is often remarked that the strong will is an important means of recovery—"that when one *wills* to get well, he will get well"—and every practitioner will have noticed the difficulty of managing those cases in which there was an indifference, or want of volition. The expression of the face will frequently give this information before a word is spoken. The firm expression of the muscles of the mouth and closure of the jaws is characteristic of strong will; whilst the relaxed muscles of the mouth, and the general want of expression, tells of enfeebled will.

Recovery will frequently depend as much, or more, upon strengthening the will, as upon the use of reme-

dies. If we can call it into action, by presenting additional motives for its exercise, or by a judicious stimulation from attendants and friends, we find that it will grow by exercise, and that which was difficult to the patient at first soon becomes easy and natural.

The brain receives impressions from the world without, and from the various parts of the body, through the apparatus and nerves of special and general sense—and this we call sensation. In the healthy body all sensations from it are pleasurable, and the use of the special senses is a source of pleasure. But in disease sensation is unpleasant, and a source of discomfort, and we designate it as pain. It is well to become thoroughly conscious of this, by passing the various sensations in review. To the sound eye, use is a pleasure, and we only know the organ through the pleasurable sense of vision; the impulse of sound waves upon the ear is pleasurable; so is the use of the sense of taste, and of smell. When we direct the mind to the apparatus of digestion, we find that it gives pleasurable sensations, in so far as it gives sensation at all; the function of respiration is pleasurable, and so is defæcation and urination.

When this sense of pleasure is lost, we may know that an organ or part is diseased, though the discomfort may not tell us the quality or amount of disease. If the use of the eye becomes a source of discomfort, our attention is called to that organ as the seat of disease, and we at once make a proper examination to determine its character. If the use of the ear is a source of discomfort, we at once conclude that it is the seat of disease, and we make the necessary examinations to determine its exact character. If there be discomfort

in the sense of taste, we know there is a wrong in the mouth where these nerves are distributed, or of the digestive apparatus to which these nerves stand sentinel. If there be discomfort in the sense of smell, we at once conclude there is disease of the nasal cavities. So when there is discomfort from any apparatus or function—the throat, larynx, lungs, stomach, bowels, defæcation, urination, etc., we know there is disease, and having our attention directed to its seat, we proceed with the proper examinations to determine its character.

Persons will sometimes have their first knowledge of organs or functions through discomfort and pain. The dyspeptic realizes that he has a stomach through pain; the minister realizes that he has a larynx, when it has become irritable and painful by abuse; the location of lungs, liver, spleen, bowels, kidneys, bladder, uterus, etc., is first realized by many through the suffering of disease.

It is well to bear in mind that pain may have two causes—it may be due in principal part or in whole from disease of the part that suffers, or of the brain that receives the impression. To determine this is an important part of the diagnosis of pain. A little care in noting the expression of the face, the eyes, and the other functions of the brain will determine this in most cases, and this may be supplemented by a careful examination of the part.

The diagnosis between the pain of structural disease and neuralgia is usually made with ease. The absence of heat, redness and swelling, in any considerable degree, is usually sufficient, but in obscure cases it is well to carry the examination further to determine lesions of the blood, of nutrition, waste and excretion.

General disease will give rise to the conditions of pain, and to a considerable extent may be considered its cause. Thus, the vascular excitement and increased temperature of fever render the brain more sensitive to impressions, and the nerves more active purveyors. The symptomatic fever that attends inflammation has the same influence in increasing pain. Thus, in those cases where pain is very severe, the means that lessen the frequency of the pulse, diminish the temperature, and establish secretion, are the most effective to cure pain.

When we study the condition of the brain as a cause of pain, we find that it is not one, as generally supposed, but two, possibly three. In one case we have evidence of vascular excitement in the flushed face, bright eyes, contracted pupils, and increased temperature. And we meet this condition with Gelseminum, the sedatives, and possibly the saline diuretics and cathartics. In the second case we find the evidence of an enfeebled circulation in the pallid, expressionless lips, the dull eyes, dilated or immobile pupils, and possibly the coolness of nose, ears and forehead—the general expression is of want of stimulus. In these cases we think of nerve stimulants, of Belladonna, Quinine, Nux, Ammonia, etc. The feeling of dullness and inclination to sleep attending some forms of pain is met especially by Belladonna and Ergot. The wrongs of perversion are not so easily determined, but with care we may find the indications for special remedies, sometimes in the expression of the face, sometimes in the appearance of the tongue, and sometimes in the changes of the pulse.

There is no doubt that many times the character of

the pain may point out the special remedy for the cure of the disease, though it is not as certain as other means of diagnosis. If *we* could feel the pain, as we feel the pulse, it would be different, but trusting to the patient's uneducated senses, and his imperfect power of analysis and expression, we find it uncertain. If persons are trained to close observation, analysis and expression in this regard, as in some Homœopathic families, it may become very reliable.

Lesions of spinal innervation are diagnosed from wrongs of function controlled by this nerve-center. Thus impairment of muscular motion may be referred to an enfeebled spinal cord, an exalted sensibility of muscles, to increased spinal innervation, whilst all forms of convulsion may be attributed to perverted spinal innervation. Among the important functions controlled from the spinal cord is that of respiration. We will sometimes find deficient respiration, that physical examination will determine is not from structural disease, and we reach the conclusion that it is want of innervation. In acute disease we sometimes find this so marked, that respiration can not be carried on except through the influence of the will and the external respiratory muscles. We notice that so soon as the patient sleeps, respiration becomes more and more difficult, until at last he is suddenly aroused by a feeling of asphyxia; thus rest is prevented, and death may result. In all these cases we think of spinal stimulants as remedies, *Nux Vomica* and *Strychnine* being the type—and increasing spinal innervation, we find our patient breathes better, and gets necessary rest.

The lesions of excess are rather rare, but still they deserve close study. We will find it marked in some

cases by excessive muscular irritability, so that the patient exhausts himself by over-exertion, or more frequently by that uneasiness which might be called muscular fret. In others the lesion is principally manifested in the respiratory muscular apparatus, giving frequent or irregular respiratory movements—respiratory fret—or sometimes severe and intractable cough from very slight internal irritation. In other cases we find the evidence in defecation and urination, giving frequency and some tenesmus, without corresponding internal disease.

In these cases there is usually hyperæmia of the cord, marked by a full, hard pulse, tense skin and muscular structures, and rigidity or contraction in all the expressions of the body. The remedies will be Veratrum, Gelseminum, Sulphur in free doses, the saline cathartics and diuretics, the cold wet-sheet pack, alkaline bath, etc.

In some rare cases, there is a condition of anæmia, and the patient requires Nux, Strychnine, Quinine, Iron, Arsenic, stimulant baths, with restoratives and animal foods.

The lesion of perversion gives us the entire series of convulsive affections, so frequently met with in the practice of medicine. In this case the spinal cord takes complete control of the body, and sets it into disorderly movement. How the wrong is produced, or what is its exact character, is not known, but when once it has obtained, the tendency is to its repetition. There is no difficulty in its recognition; the complete arrest of the function of the brain, and the disorderly activity of the muscles is so marked that it can not be mistaken.

Two causes of convulsions are recognized: the one

disease of the spinal cord itself—intrinsic, the other a lesion of some other part—extrinsic. The exact conditions of the spinal cord are not well known, but we may recognize one of vascular excitement, and one of atony and impaired circulation. In the first the surface and face is flushed, the eyes bright and pupils contracted, the pulse somewhat full and hard, and the temperature usually increased. In the other the face is pallid or livid, the eyes dull, the pupils dilated in the intervals of spasm, the extremities cold, and the pulse small and frequent. There is a third case in which there is very evident congestion of the cord, and the face will be full and dusky, the eyes protruding, and the pulse full and oppressed.

These cases are usually so well marked that the diagnosis is not difficult, and a correct treatment is at once suggested. In the first case we use *Gelsemium* or *Veratrum*, or both. In the second case we use *Lobelia*, *Chloroform*, *Bromide of Ammonium*, or the fœtid gum resins. In the third case, *Belladonna*, *Ergot*, and possibly *Aconite*; *Bromide of Ammonium* is sometimes an excellent remedy here.

It is most absurd to think of treating all cases of convulsions with one prescription. Specific Medication never goes that far, it treats conditions of disease, and not names. The instance of convulsions furnishes a very good example of the necessity of accurate diagnosis.

It is well to note here that the spinal cord having formed a habit of convulsive action, has a tendency to repeat this at varying intervals, even though no change of structure, or disease of other parts can be found to account for it. In addition to the treatment for the

convulsions, this habit, or tendency to recurrence is to be broken up, and we find in many cases that the longer the convulsive action can be postponed, the less disposition there is to its recurrence. In the treatment of some cases of epilepsy, this is a principal object, and any means which will even temporarily ward off an attack, becomes a part of the cure.

The extrinsic causes deserve consideration, though many times they have ceased before we are called to treat the cases. If in infancy we find the gums swollen and purplish, a free incision over the coming tooth may relieve the convulsion at once. If green fruit or other irritant ingesta has proven a cause of convulsions through irritation of the stomach, an emetic will give the speediest relief. If it has come from irritation of the solar plexus, attended by pain—colic—*Nux Vomica* will give relief. If from irritating materials in the intestine, cathartic enemata may be of great service. If from partial suppression of urine, the hot packs over the loins, with *Gelseminum*, will be the treatment.

Worms may be a cause of convulsions, and yet I do not think it advisable to give worm medicines, until all symptoms of nervous irritation and convulsions have been removed. Otherwise the additional irritation from the worm medicine may prove fatal.

In epilepsy the original cause may pass away in a few hours, or it may persist for years. Thus in some cases an epilepsy will arise from a temporary irritation of the stomach, the intestinal canal, or the reproductive apparatus, and no traces of the lesion will be found when we are called to treat the patient. But in other cases the lesions will persist, and their occasional or periodical increase will determine the convulsion. Thus,

menstrual derangement may prove a continuous cause, as will disease of kidneys, stomach, bowels, and some other parts. In all cases the examination is carefully made to detect local lesions, and when found, means are employed to remove them as part of the cure.

The study of *paralysis* might follow the consideration of the lesions of the brain and spinal cord, as it may embrace either or both. When the lesion is of one of the hemispheres of the brain, the paralysis is of one-half of the body, divided vertically, and is called hemiplegia. When it is of the spinal cord, it is of the lower portion of the body, the division being horizontal, and involves all parts below the seat of disease; this is called paraplegia. When of but limited extent, we call it local paralysis, and we trace it to a lesion in the course of the nerves, or to a limited disease of the centre from which the nerve has its origin.

We must not suppose that when we have diagnosed a paralysis by the impairment or total loss of motion or sensation, or both, that we are ready to make a prescription, and that all that is necessary to be done is to stimulate the nerve centres or the affected parts, by Strychnia, or electricity. We want to know the character of the wrong, both of the nerve centres and of the general health, and when we have determined this we can prescribe intelligently.

In hemiplegia we will find two conditions of the brain. In one case we will have a flushed face, bright eyes, contracted pupils, increased temperature, impaired excretion, and a pulse characterized by fullness and hardness. Surely no sane person would treat this case with Nux or Strychnine? On the contrary, we use the proper sedative, Gelseminum, means to establish

secretion, and possibly suppurative counter-irritation. In a second case the face is swollen and dusky, the lips livid or purple, the eye dull, pupils dilated or immobile, and the pulse full and oppressed. This patient wants Belladonna, Ergot, Bromide of Ammonium, and wet-cups to the spine, with, possibly, stimulating cathartics. In a third case the head is cool, the face lacks expression, and the pulse is nearly normal, but wants force. Every symptom points to anæmia of the brain, and to the want of restoratives. Here we give Nux or Strychnine as nerve stimulants, the bitter tonics, good food, and use electricity for its stimulant influence.

The diagnosis will take the same course in acute paraplegia, and the same means will be used in its treatment. When it has been preceded by an injury, or by inflammation, we wish to determine as nearly as possible the condition of the part, and whether or not the lesion has destroyed the nerve structures. Even here the treatment may be rational. We do that which needs doing, whether it be to promote the removal of effusion of organized lymph, or of water, or by an increase of waste and nutrition gradually renew the diseased structures until they are capable of doing their work.

Wrongs of the sympathetic nervous system are so intimately associated with lesion of the vegetative functions that we find difficulty in separating them. Possibly it is only where an important part or the whole of this system is involved, that it requires special study. We may classify these lesions as an excess, defect, or perversion, though the excess is more an undue excitation than an increase of power.

We will find this excess marked in an unnatural and

unaccountable frequency or hardness of pulse, and an unpleasant irritability of the organs of digestion and secretion. There can be no improvement until we can have better innervation. In such cases *Veratrum* has a most excellent action, and followed by *Arsenic*, will frequently effect cures in very stubborn cases.

Defect is marked by a feeble circulation, the artery giving the sensation of a want of tone or elasticity, and all the vegetative functions are feebly and imperfectly performed. That it is not due to a wrong of the organs themselves is readily determined by other symptoms. In these cases, *Phosphorus*, *Sulphur*, *Iron*, *Cod Liver Oil*, *Pulsatilla*, *Digitalis*, *Aconite*, are especially indicated, the particular remedy being selected by special symptoms.

Perversion of sympathetic innervation is shown by irregularity in the performance of the vegetative functions, and by changes in the character of the pulse, other than frequency, strength, or feebleness. The remedies will be selected, as named in the first part of the work.

The association of the sympathetic with the spinal nervous system gives us that condition of disease known as spinal irritation. It is of frequent occurrence in chronic disease, and when marked is sufficient to prevent a cure by the ordinary means, being a continued source of wrong innervation. It is a little singular that the source of this lesion of the spinal cord should always be an organ supplied from the sympathetic, and that irritation should be so readily propagated backward along these nerves. Yet it is a fact that a disease of irritation can not exist long in an organ without some disturbance of the great sympathetic, and the

spinal cord immediately behind the ganglion, that furnish the nervous supply.

Spinal irritation is usually marked by tenderness on pressure over the bodies of the vertebræ, and when such tenderness is found, it is taken as evidence of this lesion. But once in a while we will find the evidence at some distance from the spine, but always in the course or termination of the posterior spinal nerves.

It has been proposed by Prof. John King, to determine the locality of chronic visceral disease, by an examination of the spine, and this can be done where there is spinal irritation. If the reader will refer to a text-book on anatomy, he will see that the distribution of sympathetic nerves, and connection with the spinal cord is very simple. The sympathetic ganglia send off large nerves, which before their distribution form a network, called a plexus, and from this the nerves are distributed upon the nearest arteries. Thus if we know the source of nerve supply to a plexus, and the distribution of the arteries nearest to this, we will readily make the association between a particular part of the spinal-cord, and a special organ or organs. It might be remarked that the connection between the cord and the ganglia which lie upon the bodies of the vertebræ in front, is immediately backward and forward by filaments of communication, and that a limited portion of the gray substance of the cord is thus associated in action with a ganglion.

The first cervical ganglion sends its branches upwards on the carotids, to supply the brain and the organs of special sense; and a nerve downward, which through the cardiac plexus is distributed to the heart; thus to a certain extent associating the brain and heart in action.

The other cervical ganglia send nerves downward to the cardiac plexus, which supplies the heart, and to some extent the lungs. The upper dorsal ganglia send off the great splanchnic, which passing through the diaphragm form the solar plexus, and from this the nerves are distributed upon the cœliac axis to the stomach, liver and spleen, and upon the superior mesenteric to the small intestine and pancreas. Branches from this pass downwards upon the spermatic artery to the testes in the male and the ovaries and uterus in the female. The lower dorsal ganglia furnish the lesser splanchnic nerves, which form above the renal arteries the renal plexus, and furnish nervous supply to the kidneys, ureters and bladder. The dorsal ganglia furnish nerves for the formation of the hypogastric plexus, which gives nervous supply to the pelvic viscera. The sacral ganglia furnish nerves for the sacral plexus, which supplies some parts at the outlets of the pelvis, and the lower extremities.

The above is but a brief synopsis of this subject, and the reader will do well to give it a thorough study, and trace out the distribution of these nerves on an anatomical plate. It will be found that there is a free intercommunication between different parts, some more especially than others, and thus many sympathies observed in health and disease can be accounted for.

In the olden time we were in the habit of recommending the irritating plaster for all these cases, and though unpleasant, it may be employed with advantage in a great many. It is better, however, to determine more exactly the condition of the cord, as quite surely it is not always the same. Possibly our old division will serve our purpose here, classifying them with refer-

ence to the circulation—*a*, with vascular excitement; *b*, with enfeebled circulation, or spinal anæmia.

The case of vascular excitement will be shown in the bright eyes and contracted pupils, slight increase of temperature, and a pulse that has hardness and undue vibration as an element. It is especially the case for suppurative counter-irritation over the site of tenderness, though I prefer, as being much pleasanter, the use of the wet-pack, of water, vinegar, or water acidulated with Sulphurous Acid. The internal remedies will embrace Veratrum, Gelseminum, Bromide of Potash, and these may be aided by means to establish secretion.

The case of anæmia of the cord will be recognized by the dull, sunken eye, feeble circulation to the surface and extremities, and a pulse that wants strength. In many of these cases the skin is relaxed, and there is undue exudation. These cases may have the irritating plaster used to rubefaction, stimulant frictions, rubbing of the spine with salt water, the use of electricity (Faradization) and means of a similar character. Internally the remedies will embrace Nux, Ergot, stimulant doses of Iodine, Pulsatilla, Bromide of Ammonium, and if the pulse is small and vibratile, Rhus.

There are a few cases, marked by a full, sluggish, and oppressed pulse, dull eye and dilated pupil, in which Belladonna and Ergot will prove very efficient internal remedies, and in which a Belladonna plaster is the best local application.

NOSOLOGICAL CLASSIFICATION.

The study of this is beyond the scope of this little volume, and the reader is referred to works on the "Practice of Medicine," or special treatises on diagnosis, in which this classification is the basis. Our study has been wholly with reference to the selection of remedies, and the ordinary nomenclature interests us only as it points us to groups of remedies.

The study of nosology is of some importance in enabling one to give appropriate names, in writing or conversing of disease, and especially as satisfying the friends of a patient, who are always desirous of having a disease named. If the reader will take the classification given, and apply the methods of examination named through this work, he will find but little difficulty. We will pass it in brief review, pointing out the method of study, and giving the most pronounced symptoms.

CHLOROSIS.—In the early menstrual period, usually before the age of twenty; is characterized by want of blood, impaired nutrition, loss of flesh and strength, and differs from anæmia only in a greenish coloration of the otherwise blanched and bloodless skin. The name has no meaning in selecting remedies, unless in some cases, the peculiar shade of green would indicate Copper, and in others Sulphate of Alumina and Iron.

SCORBUTIS—Is caused by a want of vegetable food, and is especially marked by softened and spongy gums, usually of a deeper color than natural; and, finally, by a tendency to deliquescence in all tissues of low organi-

zation, especially cicatrical tissue. The name indicates a special pathological condition, and calls for vegetable acids (Citric Acid or lemon juice), and for vegetables, especially those containing a considerable amount of Potash.

DROPSY—Has different causes, which require special study. It is characterized by exudations of water into the cellular tissues—œdema, anasarca; or into the serous cavities—ascites, hydrothorax, hydropericardium, hydrocephalus, hydrocele, and hydrops articuli. The diagnosis is made by the touch, which gives a different sensation from growths, deposits, or accumulations of pus, blood, or gases. It refers us to special remedies, Apocynum, Aralia, and the hydragogue cathartics and diuretics for the removal of the accumulated fluid.

DIABETES MELLITUS.—Increased flow of urine, with loss of flesh and strength, and impairment of every function. Examination of the urine, as named under that head, determines the presence of sugar. The name does not point to remedies, which must be selected with reference to the symptoms in each individual case.

PYÆMIA.—A condition of blood simulating suppuration in solids, usually having its origin in injuries or wounds of loose, non-vital tissues, though it may arise from wounds of any part in which putrescency develops. The condition may be known by the extreme restlessness, and fear of a fatal result, a small, tremulous pulse, (sometimes the pulse has its usual inflammatory condition until a short time before death), a peculiar constriction of tissue about the base of the brain, pinched nose, and a general expression of irritability. It points

us to antiseptics and good food, as the means of cure. Opiates should not be used to relieve pain, if it is possible to get along without them.

TUBERCULOSIS.—The impairment of the blood that gives rise to aplastic and cacoplastic deposits, has already been described. There is impairment of digestion, blood-making and nutrition, with loss of flesh and strength, local symptoms indicating the situation of the deposit. The treatment is suggested by the above description—increase retrograde metamorphosis and excretion, and remove the low albuminoid materials, and improve nutrition.

FEVER.—The different forms of fever have been described in a preceding classification, and it is only necessary here to call attention to the principal phenomena, and the treatment. A fever is a disease of four stages—forming, cold, hot and sweating. The symptoms of the first are of prostration—there is an impairment of life. In the second this impairment is still greater, especially of innervation and circulation, and the patient feels cold. In the third vascular and nervous excitement are marked, the pulse is frequent, the temperature increased, the secretions partially arrested, and the vegetative functions impaired in proportion to the severity of the disease. In the fourth stage, the various functions are restored, and excretion established—it is convalescence. Whether a fever lasts a day or a month, it has these symptoms, with additional ones showing a wrong of the blood.

The treatment suggested is very plain. In the forming and cold stages means to increase the life, and especially to stimulate the nervous and vascular systems

In the hot stage, to reduce the frequency of the pulse, the temperature and excitation of the nervous system, and to increase excretion and the vegetative functions, employ such means as will check destruction of the blood, or that will neutralize any morbid element in it.

LOCAL DISEASE.—Local disease is determined by the unpleasant sensations in the part, experienced by the patient; by change in its functional expression; and by an examination with our senses, and the application of any instrumentality that medicine affords.

The distinction between functional and structural disease is determined by the careful examination of the physician. In functional disease we expect to find little or no change in the physical properties of the part; in structural disease such changes will be detected.

THE BRAIN.—Disease of the brain is shown by unpleasant and painful sensations experienced in the organ, a change in the expression of the face and body, and changes in its functional expression. The character of the disease will be diagnosed by symptoms already pointed out.

It suggests the use of brain remedies, in addition to a right general treatment. As examples we may name Gelseminum, Belladonna, Pulsatilla, Opium, Bromides of Potash and Ammonium, Phosphorus, Cypripedium, Camphor, Nux, Quinia, Rhus.

THE SPINAL CORD.—Disease of the spinal cord is shown by unpleasant sensations experienced in the spine by the patient, by wrongs of muscular movement, respiration, etc. The same remedies are employed as for the brain,

OF THE NOSE.—Unpleasant sensations in and change in secretion of the nasal mucous membrane. Remedies that influence mucous membranes.

PHARYNX.—Sore throat, with unpleasant sensations in deglutition and respiration. The throat can be inspected and changes of structure noted.

LARYNX.—Unpleasant sensations in the part; change in the voice; difficulty of respiration; cough; sputa; and change in the sounds on auscultation. Special remedies, Aconite, Spongia, Antimony, Collinsonia.

BRONCHIA.—Unpleasant sensations in the thorax; difficult respiration; cough; sputa; and change in the sounds heard on auscultation—blowing. Treatment will be general, and remedies that influence mucous membranes.

LUNGS.—Unpleasant sensations in the thorax; difficult respiration; cough; sputa; sounds heard in auscultation—crepitant; percussion gives dullness when consolidation has taken place from any cause. Remedies, Aconite, Ipecac, Lobelia, Drosera, Agrimonia, Phosphorus.

HEART.—Unpleasant sensations in the præcordia; sense of oppression and impending danger; change in the pulse; and impairment of the circulation. Special remedies, Veratrum, Aconite, Digitalis, Cactus, Pulsatilla, Rhus, Bryonia.

PLEURA.—Pains of a sharp, lancinating character; difficulty in inspiration; cough; no change upon auscultation except in rare cases; dullness on percussion from effusion. Remedies are all general, unless we except Bryonia and Asclepias.

MOUTH AND SALIVARY GLANDS.—Unpleasant sensations, especially on taking food; on exposure structural lesions can be seen and felt. Special remedies, Mercury, Iris, Podophyllin, Phytolacca, Collinsonia.

ŒSOPHAGUS.—Difficult deglutition. Remedies general, except for nervous dysphagia, Pulsatilla.

TONSILS.—Uneasy sensations in the throat; difficult deglutition and respiration; can be inspected and changes in size and form noted. Remedies, Aconite, Nitrate of Potash.

STOMACH.—Unpleasant sensations in the region of the stomach, and impairment of function. Special remedies, Hydrocyanic Acid, Bismuth, Muriatic Acid, Lactic Acid, Pepsin, Hydrastis, Podophyllin, Leptandrin, Nux, the class of emetics.

SMALL INTESTINE.—Uneasiness in the abdomen; impairment of digestion; diarrhoea. Special remedies, Bismuth, Podophyllin, Nitric Acid, Hydrastis, Nux, Agrimonia, Epilobium, Aconite, Ipecac, a part of the class of cathartics.

LARGE INTESTINE.—Uneasiness in the abdomen; tormina; tenesmus; and small, non-fæcal evacuations. Special remedies, Aconite, Ipecac, Aloes, Colocynth, Hamamelis, Collinsonia.

LIVER.—Unpleasant sensations in right hypochondrium, with occasional slight change in form and size; impairment of digestion; and changes in the color of the skin. Special remedies, Leptandra, Nux, Nitric Acid, Sulphur.

SPLEEN.—Unpleasant sensations in left hypochondrium; change in form and position of the organ determined by the touch; and impairment of blood-making and nutrition. No special remedy unless it be the *Uvedalia*.

PERITONEUM.—Sharp, lancinating pain in the abdomen, increased by pressure, motion or respiration, with small, wiry pulse, if inflammatory. No special remedies.

SUPRA-RENAL CAPSULES.—But one disease known—Addison's—characterized by bronzed discoloration of the skin, gradually increasing, and associated with impairment of the vegetative functions. No remedies known.

KIDNEYS.—Unpleasant sensations in the lumbar region near spine, in the urinary apparatus below, and in micturition; changes in the urine determined by examination; and an influence upon the nervous system by retained urea—excitation at first, coma following. Special remedies, *Gelsemium*, *Belladonna*, and the class of diuretics.

BLADDER.—Unpleasant sensations behind the pubes; perineal pressure; difficult and painful micturition; and the presence of its secretion, mucus or pus, in the urine. Special remedies, *Eryngium*, *Apis*, *Phosphorus*, *Hydrangea*, *Agrimonia*, *Staphysagria*.

PROSTATE GLAND.—Unpleasant sensations in the perineum; difficult and painful micturition; and an examination externally and by rectum determines change in size and sensibility. Special remedies, *Staphysagria*, *Hamamelis*, *Phosphorus*, *Pulsatilla*.

URETHRA.—Unpleasant sensations in passing water ; discharges. Special remedies, Cannabis Indica, Copai-ba, Cubebs, Macrotys, Sandal Wood.

TESTES.—Unpleasant sensations in ; changes in size and form. Special remedies, Phytolacca, the Bromides, Pulsatilla, Staphysagria, Phosphorus, Iodine.

OVARIES.—Unpleasant sensations in the iliac regions ; change of size and sensibility to the touch ; and wronge of the reproductive function. Special remedies, Macrotys, Actea, Caulophyllum, Pulsatilla.

UTERUS.—Unpleasant sensations in the pelvis ; change of size and form ; change of position ; change in the menstrual and reproductive functions by the discharges ; change in the tissues determined by the touch and by sight. Special remedies, Ergot, Macrotys, Caulophyl-lum.

VAGINA AND VULVA.—Unpleasant sensations ; by the discharges ; and by an examination by the touch and speculum. Special remedies, those which influence the reproductive function ; other remedies such as influence mucous membranes, and the general health.

ARTERIES.—Changes in the sensation given to the touch, and impairment of the circulation. Special remedies, the same that influence the heart.

VEINS.—Change in size, form, course, and in their color. Special remedies, Hamamelis, Ergot, Iron.

LYMPHATIC GLANDS.—Changes in size, in tempera-ture and in sensibility ; with special impairment of the

blood, and of nutrition in some cases. Special remedies, *Phytolacca*, *Iris*, *Stillingia*, *Alnus*, *Scrophularia*, *Iodine*, *Bromine*, *Phosphorus*, *Arsenic*.

SKIN.—Unpleasant sensations; changes in structure determined by examination. Special remedies, diaphoretics, *Arsenic*, *Phosphorus*, *Sulphur*.

EYE.—Unpleasant sensations; wrongs of function. Special remedies, *Belladonna*, *Calabar Bean*, *Gelsemium*, *Opium*, *Rhus*, *Macrotys*, *Cannabis Indica*, *Arsenic*.

EAR.—Unpleasant sensations; wrongs of function. No special remedies.

BONES.—Unpleasant sensations; change of form, size, sensibility, and impaired use. No special remedies.

MUSCULAR TISSUES.—Unpleasant sensations in movement; changes in size, form and sensibility. Special remedies, *Macrotys*, *Apocynum*, *Bryonia*, *Sticta*, *Phytolacca*, *Colchicum*, *Potassæ*.

ARTICULATIONS.—Unpleasant sensations; changes in form, size and sensibility. No special remedies, except possibly *Bryonia* and *Macrotys*.

CELLULAR TISSUE.—Symptoms of inflammation, supuration. Special remedy, *Lime*.

We have passed most of the organs and tissues in review, in order to impress the fact that remedies do act on special parts. Only a few remedies have been named as examples, but the reader is advised to make notes of remedies under the various heads as they come to his notice by reading or experiment. It must prove

of value in therapeutics, to be able to at once associate a group of remedies with special parts and functions, as having them thus clearly before us we can better choose the individual remedy applicable to the case in hand.

Much more might have been written on this subject, and I doubt not the reader will feel that a more minute examination of local disease would have been profitable. Yet there are many authorities who give this information, and as said before, it is beyond the scope of our work to make this study.

Something must be left for each reader to think out for himself, (and this is really the most profitable study), and I have endeavored to point out the way, and give subjects for such thought. The physician who does his own thinking will always have the largest measure of success, and the greatest pleasure in and from his work.

INDEX OF REMEDIES.

In appending an index of remedies, I desire to point out the prominent indications for their use, whilst reference is made to the pages where the agents are noticed. With some of the agents this index will be quite a complete study, and as the reader has all the special indications before him, he will be better able to group them together. So in the study of individual remedies, I thought it would be better to so arrange the index that the reader might do his reading with reference to the one agent; or when using it as a work of reference, he would be pointed to the special feature he desired to study.

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